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A REVIEW

OF THE

TENTH EDITION

BEING SPECIMEN PAGES AND EXTRACTS

FROM THE

cyclopædia Britannica

NOW COMPLETED

IN 35 QUARTO VOLUMES

TREATING OF

HISTORY, GEOGRAPHY, BIOGRAPHY, COMMERCE, INDUSTRY, ART, LAW, LITERATURE, MUSIC, DRAMA, PHILOSOPHY, RACES AND CREEDS, MEDICINE, ARMY AND NAVY, THE COLONIES, AGRICULTURE, POLITICS, ECONOMICS, BIOLOGY, ENGINEERING, SCIENCE, AND ALL OTHER SUBJECTS

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Publishers' Note

HIS pamphlet aims at being no more than a cursory review of the ground covered by the latest edition of the *Encyclopædia Britannica.* In the grouping of the extracts two main objects have been kept in view:

1. To show the variety of the contents of the volumes;
2. To indicate how minutely each general subject has been subdivided.

The following pages are thus the result of an attempt, by means of selections from the volumes, to illustrate the significance of the Prime Minister's recent expression on the Tenth Edition, that it "will lighten the labours of every student, and will enable all the English-speaking peoples of the earth to obtain, at the least possible cost of labour and exertion, all the best intellect and the best research of their age."

The changes witnessed in the last century and a half and recorded in the 26,000 articles of the *Encyclopædia Britannica* are indeed formidable, in comparison with all that constitutes the previous history of mankind.

When we hold in our hands the first edition, which consisted of three volumes only, and realize that the whole contents of those three volumes could easily be included in one of the thirty-five volumes forming the present issue, we have tangible evidence how extraordinary has been the advance marked by the growth of the work to its present dimensions.

But, more than this, the superlative eloquence of one historical fact will suffice in this Prefatory Note to make us feel how complete has been the revolution of thought that has taken place in the period between the First and Tenth Editions.

In 1759, only twelve years before the *Encyclopædia Britannica* was first presented to the public, such was the political danger ascribed to the diffusion of knowledge that the French Government formally suppressed the Encyclopædia of Diderot. He had spent twenty years of his life on this monumental labour; he had rallied 4000 subscribers to his side; and at the last moment, before the issue of the final volumes, a timid printer — rather than face the consequences of publishing the book unmutilated—had the audacity to strike out any passage which impressed him as being too bold. Such proceedings, viewed in the light of modern liberty, seem to be an almost incredible tyranny, to which the history of literature itself scarcely furnishes a parallel.

But before the final volumes of the French work reached their subscribers, the great ball of human inquiry had been set rolling in England. The first edition of the

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Encyclopædia Britannica was published in 1771. The opening sentence of its two-page preface indicated the policy which has governed all successive editions of the work :—

> *Utility ought to be the principal intention of every publication. Wherever this intention does not plainly appear, neither the books nor their authors have the smallest claim to the approbation of mankind.*

Consistently with the policy thus indicated by the "Society of Gentlemen in Scotland," to whose labours we owe the original Edition, the editors of the present issue have devoted much attention to the difficult problem of reconciling the generous and authoritative treatment of every possible subject of modern thought with the presentation of their matter in such a form that every degree of curiosity in an unfamiliar province of learning—from the crudest desire to know a name or a date, to the most exacting ambition to exhaust all that is known on a subject—may be amply satisfied with the least possible inconvenience and loss of time.

The solution of this problem has been effected by means of an Index, which not only enables the reader at once to find his way to any passage of the 26,000 articles, but also constitutes an alphabetical tabulation of the whole sum of human knowledge. The mere statement that this Index contains upwards of half a million entries shows that in mass alone it greatly exceeds any Index which has ever been undertaken. But its inherent value will rest less upon its voluminousness than upon the fact that it embraces every topic which has ever been made the subject of human inquiry, and that it has been compiled with such minute care as to offer the greatest facility for every kind of research. Simplicity is its characteristic feature. The few explanations necessary for a lucid comprehension of the references in the thousand-page volume will be found on page 70 of this pamphlet.

The *Encyclopædia Britannica* may now be said to be a work of unparalleled completeness. Not only is the immense mass of learning accumulated in the volumes a priceless possession, but each separate item of information has been made easily accessible to readers of every description. The crowning point has thus been added to that policy of combining learning with utility which a century and a half ago characterized the inauguration, as it now characterizes the completion, of the great national work of reference.

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THIS Review contains Extracts from only 298 of the 26,000 Articles, reproductions of 34 from the 614 Plates and Maps, and 40 from the 11,400 other Illustrations in the TENTH EDITION.

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entenary
s Mr Sw

A FEW EXAMPLES extracted from the numerous Articles on HISTORY IN THE 10th EDITION of the Encyclopædia Britannica.

Histories make men wise; poets witty; the mathematics subtile; natural philosophy deep; moral grave; logic and rhetoric able to contend.—BACON.

THE wisdom of the historian in the First Edition of the Encyclopædia Britannica was different from that of his successor in the Tenth. To understand the nature of this change is to realise the immense distinction between the Eighteenth and Twentieth Centuries; between the brilliant inaccuracy of Hume and the indefatigable minuteness of Freeman. The older men aimed at literary form, weight and dignity of language, depth of moral, and sagacity of political reflexion. They were habitually careless and indifferent as regards research. But they were chiefly distinguished from the new historians in having no conception of society as an organism, no suspicion of the depth and variety of the social forces which underlay and originated the visible events which they described, often with admirable power. They possessed the genius of narration without that of critical insight into the sources and quality of their material. Evolution is the philosophical expression for that scientific change in the methods of thought which is reflected in the best minds of our time. History has lost something of her glamour in the colder light of the scientific tests to which she has fearlessly exposed herself.

We have only to read the articles on GIBBON and GARDINER to realise the singular divergence of thought that separates the two men and their times. It is this study, the history of History, which can be pursued with an unflagging interest through the pages of the Encyclopædia Britannica, while the important articles by leading historians will enable the reader to note for himself the variety of their styles and aims.

But to the exhaustive study of World History in the Encyclopædia Britannica has now been added an entirely novel characteristic in the Tenth Edition. The Index, forming Vol. 35, enables the historical student, in a moment, to verify a date or fact, to trace a dynasty, to contrast the simultaneous developments of great human movements in various countries, or to follow up the stages of significant and universal controversies. No important battle, no Act or Decree, no names associated with the history of the globe, no heading, in fact, under which it has been thought possible the reader would search, are omitted.

Thus, besides possessing the recognized value of a final authority on all the problems and enquiries with which human knowledge is concerned, the Encyclopædia Britannica can now claim to have the advantages of an exhaustive dictionary of reference, which will save the student from needless research into regions alien from his subject, and will enable him instantly to discover the information of which he is in pursuit. By this means he can acquire a maximum of facts in a minimum of time and with a minimum of labour.

The extracts given below are but a few from the great mass of historical articles in the Tenth Edition of the Encyclopædia Britannica, describing every nation's story, and the events of every epoch, whether primitive, classical, mediæval, or modern.

THE END OF THE VICTORIAN ERA.

From the Article (27 pages) by Sir SPENCER WALPOLE, K.C.B.

English History.— . . . . . . The defeat and dispersal of the Boer armies, and the apparent collapse of Boer resistance, induced a hope that the war was over; and the Government seized the opportunity to terminate the parliament, which had already endured for more than five years. The election was conducted with unusual bitterness; but the constituencies practically affirmed the policy of the Government by maintaining, almost unimpaired, the large majority which the Unionists had secured in 1895. Unfortunately, the expectations which had been formed at the time of the dissolution were disappointed. The same circumstances which had emboldened the Boers to declare war in the autumn of 1899, induced them to renew a guerilla warfare in the autumn of 1900—the approach of an African summer supplying the Boers with the grass on which they were dependent for feeding their hardy horses. Guerilla bands suddenly appeared in different parts of the Orange River colony and of the Transvaal. They interrupted the communications of the British armies; they won isolated victories over British detachments; they even attempted the invasion of the Cape Colony. Thus the year which concluded the century closed in disappointment and gloom. The serious losses which the war entailed, the heavy expenses which it involved, and the large force which it absorbed, filled thoughtful men with anxiety.

The close of 1900.

No one felt more sincerely for the sufferings of her soldiers, and no one regretted more truly the useless prolongation of the struggle, than the venerable lady who occupied the throne. She had herself lost a grandson (Prince Christian Victor) in South Africa; and sorrow and anxiety perhaps told even on a constitution so unusually strong as hers. At any rate, towards the close of 1900 it was reported, in well-informed circles, that Her Majesty was not enjoying her usual health. About the middle of January 1901 it was known that she was seriously ill; on the 22nd she died. The death of the Queen thus occurred immediately after the close of the century over so long a period of which her reign had extended. That reign witnessed the greatest industrial triumphs which the

The death of the Queen.

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The Encyclopædia Britannica is now completed with an Index of upwards of half a million entries.

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See p. 13 of this ...mous picture "Capitulation of Sedan" in the Encyclopædia Britannica.

world had ever seen; the expansion of the Anglo-Saxon race and the development of Anglo-Saxon rule in every quarter of the globe. Commencing in a period of great internal suffering, it ended at a time of unusual prosperity; and of all the remarkable facts in the reign, there is, perhaps, nothing more noteworthy than these: during the first five years of it poverty and crime in England attained their maxima; while, during the last five years of it, the pressure of poverty and the burden of crime were reduced to the lowest proportions which had ever been known. The vast expansion of the empire, and the marked improvement in the condition of the people, were due to causes with which the Queen herself had no direct concern. But in other respects the Queen rendered services to the country of the highest importance. In the first place, her own example exerted a beneficial influence on all who surrounded her. The atmosphere of the court, which had been injuriously affected during the reigns of her immediate predecessors, was purified by her influence and her conduct. The tone of society was insensibly raised by her example, and it is not too much to say that she left her country better than she found it. The Queen's public conduct, moreover, was as much above criticism as her private life. It would, perhaps, be an exaggeration to say that she invented constitutional government; but she practically determined by her example the right course for constitutional sovereigns to pursue. . . . . . .

[*For the Victorian Era see Articles on* QUEEN VICTORIA, ENGLAND, BRITISH EMPIRE, ENGLISH HISTORY, BRITISH CENTRAL AFRICA, INDIA, CANADA, EGYPT, AUSTRALIA, CHARTERED COMPANIES, SEA POWER, BEACONSFIELD, *&c.*]

THE OXFORD SCHOOL OF HISTORIANS.

From the Article (9 pages) by EDMUND GOSSE, *LL.D.*

English Literature.— . . . . . . In history the work done has been solid and considerable, and it has had the advantage of moving on a more consistent plane than has been the case in other branches of literature. It is impossible to say that any particular school of poetry or fiction or criticism flourished pre-eminently in the period from 1880 onwards, but of an Oxford school of historians it is permissible to speak. These men were the direct successors and inheritors of the historians who, in the opening quarter of the 19th century, had determined that their first duty was to build the history of the country "upon unquestionable muniments." Of the leaders of this brilliant school, the eldest was James Anthony Froude (1818–1894), who was much exercised with the legacy of Carlyle's memoirs in the earlier part of our period, but who returned to his old investigations in his *Divorce of Catharine of Aragon* (1891), and his *Erasmus* (1894). He outlived his lifelong rival and opposite, Edward A. Freeman (1823–1892), whom, by a curious irony, Froude succeeded for a few months as Regius Professor at Oxford. Freeman was, on the whole, the most characteristically active historian of these years; during the first twelve of them he was ceaselessly at labour, and at his death he left a body of disciples engaged on important and prominent research according to his particular methods. Freeman's *William Rufus* belongs to 1882; his *History of Sicily* (1892–94) was unfinished at his death. During the interval he was incessantly working, and for eight years he was Professor at Oxford. Dr William Stubbs (1825–1901) had completed his *Constitutional History* before our period begins, and his later energies principally went out in the direction of diocesan work; in 1884 he was appointed bishop of Chester, and in 1889 translated to Oxford. His subsequent historical work was principally confined to the editing of one or two texts. The fourth of these great historians, Dr Samuel Rawson Gardiner (1829–1902), was engaged during the whole period with his patient delineation of the Commonwealth and the Protectorate. Two historians who derived their inspiration from the example of Stubbs and Freeman were John Richard Green (1837–1883) and Mandell Creighton (1843–1901), the former as much distinguished for the agreeable vivacity of his style as the latter for the austerity of his irreproachable search for truth. A historian who stood apart from the Oxford school was Sir John Robert Seeley (1834–1895), whose work on *The Expansion of England* (1883), and whose posthumously printed lectures on *The Growth of British Policy* (1895), had a very deep influence in inducing the development of imperialistic ideas in intelligent minds. . . . . . .

[*Under the headings,* BUCKINGHAM, STRAFFORD, NORMANS, HAROLD, ENGLAND, PEERAGE, *will be found a few of the Articles contributed to the Encyclopædia Britannica by the late* Mr FREEMAN, *Regius Professor of Modern History, Oxford, and the late* Dr S. RAWSON GARDINER.]

THE PICTURESQUE IN HISTORY.

From the Article (3 pages) by the Rev. WILLIAM HUNT, *M.A.*

Froude, James Anthony (1818–1894).— . . . . . . Froude was not a historical scholar and his work is often marred by prejudice and incorrect statements. He wrote with a purpose. The keynote of his *History* is contained in his assertion that the Reformation was "the root and source of the expansive force which has spread the Anglo-Saxon race over the globe." Hence he overpraises Henry VIII. and others who forwarded the movement, and speaks too harshly of some of its opponents. . . . .

Yet, notwithstanding its defects, Froude's *History* is a great achievement; it presents an important and powerful account of the Reformation period in England, and lays before us a picture of the past magnificently conceived, and painted in colours which will never lose their freshness and beauty. As with Froude's work generally, its literary merit is remarkable; it is a well-balanced and orderly narrative, coherent in design and symmetrical in execution. Though it is perhaps needlessly long, the thread of the story is never lost amid a crowd of details; every incident is made subordinate to the general idea, appears in its appropriate place, and contributes its share to the perfection of the whole. The excellence of its form is matched by the beauty of its style, for Froude was a master of English prose. The most notable characteristic of his style is its graceful simplicity; it is never affected or laboured; his sentences are short and easy, and follow one another naturally. He is always lucid. He was never in doubt as to his own meaning, and never at a loss for the most appropriate words in which to express it. Simple as his language is, it is dignified and worthy of its subject. Nowhere perhaps does his style appear to more advantage than in his four series of essays entitled *Short Studies on Great Subjects* (1867–82), for it is seen there unfettered by the obligations of narrative. Yet his narrative is admirably told. For the most part flowing easily along, it rises on fit occasions to splendour, picturesque beauty,

The section of this pamphlet devoted to Biography in the Tenth Edition is rich in suggestion for the reader.

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Centenary is Mr Sw

Free Trade or Protection

"The splendid isolation" of Great Britain is bringing with it its nemesis, and the practicability of Free Trade will in the next decade be once again gravely debated. The articles "FREE TRADE," "TARIFFS," and "PROTECTION" in the Tenth Edition of the *Encyclopædia Britannica* make it possible for the reader to study the question in detail.

or pathos. Few more brilliant pieces of historical writing exist than his description of the coronation procession of Anne Boleyn through the streets of London, few more full of picturesque power than that in which he relates how the spire of St Paul's was struck by lightning; and to have once read is to remember for ever the touching and stately words in which he compares the monks of the London Charterhouse preparing for death with the Spartans at Thermopylæ. Proofs of his power in the sustained narration of stirring events are abundant; his treatment of the Pilgrimage of Grace, of the sea fight at St Helens and the repulse of the French invasion, and of the murder of Rizzio, are among the most conspicuous examples of it. Nor is he less successful when recording pathetic events, for his stories of certain martyrdoms, and of the execution of Mary Queen of Scots, are told with exquisite feeling and in language of well-restrained emotion. And his characters are alive. We may not always agree with his portraiture, but the men and women whom he saw exist for us, instinct with the life with which he endows them and animated by the motives which he attributes to them. His successes must be set against his failures. At the least he wrote a great history, one which can never be disregarded by future writers on his period, be their opinions what they may; which attracts and delights a multitude of readers, and is a splendid example of literary form and grace in historical composition. . . .

[*The lives of modern historians figure largely in the biographies of the Encyclopædia Britannica. Among them will be found lengthy notices and criticisms of* Professor FREEMAN, CARLYLE, Dr MANDELL CREIGHTON, Lord ACTON, KINGLAKE, STUBBS, Professor LECKY, Dr GARDINER.]

THE FIRST SOLDIERS OF THE CROSS.

From the Article (10 pages) by the Rev. Sir GEORGE W. COX, Bart., Author of "History of Greece."

Crusades.— . . . . . To the north of the Alps the indignation of the people had been roused to fever heat by the preaching of Peter the Hermit. With the stature and ungainliness of a dwarf, emaciated by the austerities of his self-imposed discipline, this man, who had forsaken his wife and abandoned his military standard under the counts of Boulogne, had returned from the Holy Land with his heart on fire, not so much from the memory of the hardships which he had himself undergone as for the cruelties and tortures which he had seen inflicted on his fellow-Christians. Simeon, the patriarch of Jerusalem, to whom he first betook himself, could only bewail the weakness of the emperor and of his government. "The nations of the West shall take up arms in your cause," was the reply of the hermit, who soon afterwards, armed with the special blessing of Urban II., mounted his ass, and with bare head and feet, carrying a huge crucifix, traversed the Teutonic lands, rousing everywhere the uncontrollable indignation which devoured his own soul. His vehemence carried all before him, none the less, perhaps, because he bade them remember that no sins were too heinous to be washed away by the waters of the Jordan, no evil habits too deadly to be condoned for the one good work which should make them champions of the cross. Urban, however, and his counsellors, knew well that before the fatal die could be prudently cast a serious task lay before them. The system of feudalism substituted personal ascendency for the dominion of law; and wherever the personal bond failed, the resort was inevitably to private war. The practice of such wars had become virtually an organized trade; and if a large proportion of the population should be drawn away to fight against the infidel in Palestine, those who remained at home would be without defence. Such wars were therefore formally condemned; the women and the clergy, merchants and husbandmen, were placed under the special protection of the church, and the Truce of God was solemnly confirmed. The nearer and more immediate dangers being thus guarded against, Urban from a lofty scaffold addressed the assembled multitude, dwelling in the first place, and perhaps not altogether prudently, on the cowardice of the Turks, and on the title to victory which birth in a temperate climate conferred on the Christians. They were thus sure of success, and sure, too, to win an infinitely higher blessing—the remission of their sins. Sufferings and torments more excruciating than any which they could picture to themselves might indeed await them; but the agonies of their bodies would redeem their souls. "Go then," he said, "on your errand of love which will put out of sight all the ties that bind you to the spots which you have called your homes. Your homes, in truth, they are not. For the Christian all the world is exile, and all the world is at the same time his country. If you leave a rich patrimony here, a better patrimony awaits you in the Holy Land. They who die will enter the mansions of heaven, while the living shall pay their vows before the sepulchre of their Lord. Blessed are they who, taking this vow upon them, shall obtain such a recompense; happy they who are led to such a conflict, that they may share in such rewards." With the passionate outburst, "It is the will of God, it is the will of God," the vast throng broke in upon the Pontiff's words. "It is indeed His will," the Pope went on, "and let these words be your war-cry when you find yourselves in presence of the enemy. You are soldiers of the cross; wear then on your breasts or on your shoulders the blood-red sign of Him who died for the salvation of your souls."

Preaching of Peter the Hermit.

Speech of Pope Urban II. at Clermont.

So was sanctioned the mighty enterprise which hurled the forces of Latin Christendom on the infidels who had crushed the East under the yoke of Islam; and so it received its name. Of the thousands who hastened to put on the badge the greater number were animated probably by the most disinterested motives, while some had their eyes fixed on the results of more politic calculations. . .

. . . .

[*These are but a few lines from the ten-page Article which the* Rev. Sir GEORGE W. COX *contributes, tracing the story in all its picturesque details from the birth of the crusading spirit to its decay at the end of the 13th century. See also the Articles* RICHARD I., PETER THE HERMIT, LOUIS VII., *&c.*]

For specimen page of the Index in the Tenth Edition, see p. 164 of this pamphlet.

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The celebration of the VICTOR HUGO C[illegible] in Paris was the occasion of many expressions of admiration for the Poet, but none were more enthusiastic than [illegible] S[illegible]inburne's article in the Tenth Edition of the Encyclopædia Britannica.

AN EMPIRE IN THE MAKING.

From the Article (42 pages) by J. W. HEADLAM, Dr HERMAN WAGNER, and J. G. ROBERTSON.

Germany.— . . . . .

II.—HISTORY, 1870–1900.

The foundation of the empire in 1871 begins a new era in the history of Germany. The rivalry of the dynasties to which for so long the interests of the nation had been sacrificed now ceased. By the treaties of Versailles the kingdoms of Bavaria and Würtemberg, and the grand duchy of Baden, as well as the southern provinces of the grand duchy of Hesse, were added to the North German confederation. Henceforward all the German states that had survived the struggle of 1866, with the exception of the empire of Austria, the grand duchy of Luxemburg, and the principality of Liechtenstein, were incorporated in a permanent federal state under the leadership of Prussia. . . . .

The new empire.

The great work since 1870 has been that of building up the institutions of the empire. For the first time in the history of Germany there has been a strong administration ordering, directing, and arranging the life of the whole nation. The work which in England was done by the Plantagenets, which in France was begun by the House of Bourbon and completed by the Revolution, is now proceeding, and the city of Berlin is rapidly acquiring a position similar to that held by London and Paris. The unification of Germany was not ended by the events of 1866 and 1871; it was only begun. The work has throughout been done by Prussia; it has been the extension of Prussian principles and Prussian administrati[illegible] energy over the whole of Germany. It naturally falls into two periods; the first, which ends in 1878, is that in which Bismarck depended on the support of the National Liberals. They were the party of union and uniformity. The Conservatives were attached to the older local diversities, and Bismarck had therefore to turn for help to his old enemies, and for some years an alliance was maintained, always precarious, but full of results. . . . .

The period 1870 to 1878.

The influence of Liberalism, which served the Government so well in this work of construction, brought about also the conflict with the Roman Catholic Church which distracted Germany for many years. The causes were, indeed, partly political. The Ultramontane party in Austria, France, and Bavaria had, after 1866, been hostile to Prussia; there was some ground to fear that it might still succeed in bringing about a Catholic coalition against the empire, and Bismarck lived in constant dread of European coalitions. The Polish sympathies of the Church in Germany made him regard it as an anti-German power, and the formation of the Catholic faction in parliament, supported by Poles and Hanoverians, appeared to justify his apprehensions. But besides these reasons of state there was a growing hostility between the triumphant National parties and the Ultramontanes, who taught that the Pope was greater than the Emperor and the Church than the nation. The conflict had already begun in Baden. As in every other country, the control of the schools was the chief object of contention, but the Government also claimed a control over the education and training of the clergy. . . . . . .

Kulturkampf.

. . . .

The beginning of the year 1890 brought a decisive event. The period of the Reichstag elected in 1887 expired, and the new elections, the first for a quinquennial period, would take place. The chief matter for decision was the fate of the Socialist law; this expired 30th September 1890. The Government at the end of 1889 introduced a new law, which was altered in some minor matters, and which was to be permanent. The Conservatives were prepared to vote for it; the Radicals and Centre opposed it; the decision rested with the National Liberals, and they were willing to accept it on condition that the clause was omitted which allowed the state governments to exclude individuals from districts in which the state of siege had been proclaimed. The final division took place on 25th February 1890. An amendment had been carried omitting this clause, and the National Liberals therefore voted for the Bill in its amended form. The Conservatives were ready to vote as the Government wished; if Bismarck was content with the amended Bill, they would vote for it, and it would be carried; no instructions were sent to the party; they therefore voted against the Bill, and it was lost. The House was immediately dissolved. It was to have been expected that, as in 1878, the Government would appeal to the country to return a Conservative majority willing to vote for a strong law against the Socialists. Instead of this, the Emperor, who was much interested in social reform, published two proclamations. In one addressed to the chancellor he declared his intention, as Emperor, of bettering the lot of the working classes; for this purpose he proposed to call an international congress to consider the possibility of meeting the requirements and wishes of the working men; in the other, which he issued as king of Prussia, he declared that the regulation of the time and conditions of labour was the duty of the state, and the Council of State was to be summoned to discuss this and kindred questions. Bismarck, who was less hopeful than the Emperor, and did not approve of this policy, was thereby prevented from influencing the elections as he would have wished to do; the coalition parties, in consequence, suffered severe loss; Socialists, Centre, and Radicals gained numerous seats. A few days after the election Bismarck was dismissed from office. The difference of opinion between him and the Emperor was not confined to social reform; beyond this was the more serious question as to whether the chancellor or the Emperor was to direct the course of the Government. The Emperor, who, as Bismarck said, intended to be his own chancellor, required Bismarck to draw up a decree reversing a cabinet order of Frederick William IV., which gave the Prussian minister-president the right of being the sole means of communication between the other ministers and the king. This Bismarck refused to do, and he was therefore ordered to send in his resignation.

Fall of Bismarck.

. . . .

Encouraged by the interest which the events in China had aroused, a very important project was laid before the Reichstag in November 1897, which would enable Germany to take a higher place among the maritime Powers. A completely new procedure was introduced. Instead of simply proposing to build a number of new ships, the Bill laid down permanently the number of ships of every kind of which the navy was to consist. They were to be completed by 1904; and the Bill also specified how often ships of each class were to be replaced. The plan would establish a normal fleet. . . . The Bill was strongly opposed by the Radicals; the Centre was divided; but the very strong personal influence of the Emperor, supported by an agitation of the newly-formed *Flotten Verein* (an imitation of the English Navy League), so influenced public opinion that the opposition broke down. A general election was imminent, and no party dared to go to the country as the opponents of the fleet.

Naval programme, 1897.

Every man has a direct interest in the Admiralty's expenditure, as direct as in his own house bills. The articles on Naval problems in the Tenth Edition concern every Englishman.

is by J. W. Headlam, M.A.

Wilkinson, M.A.

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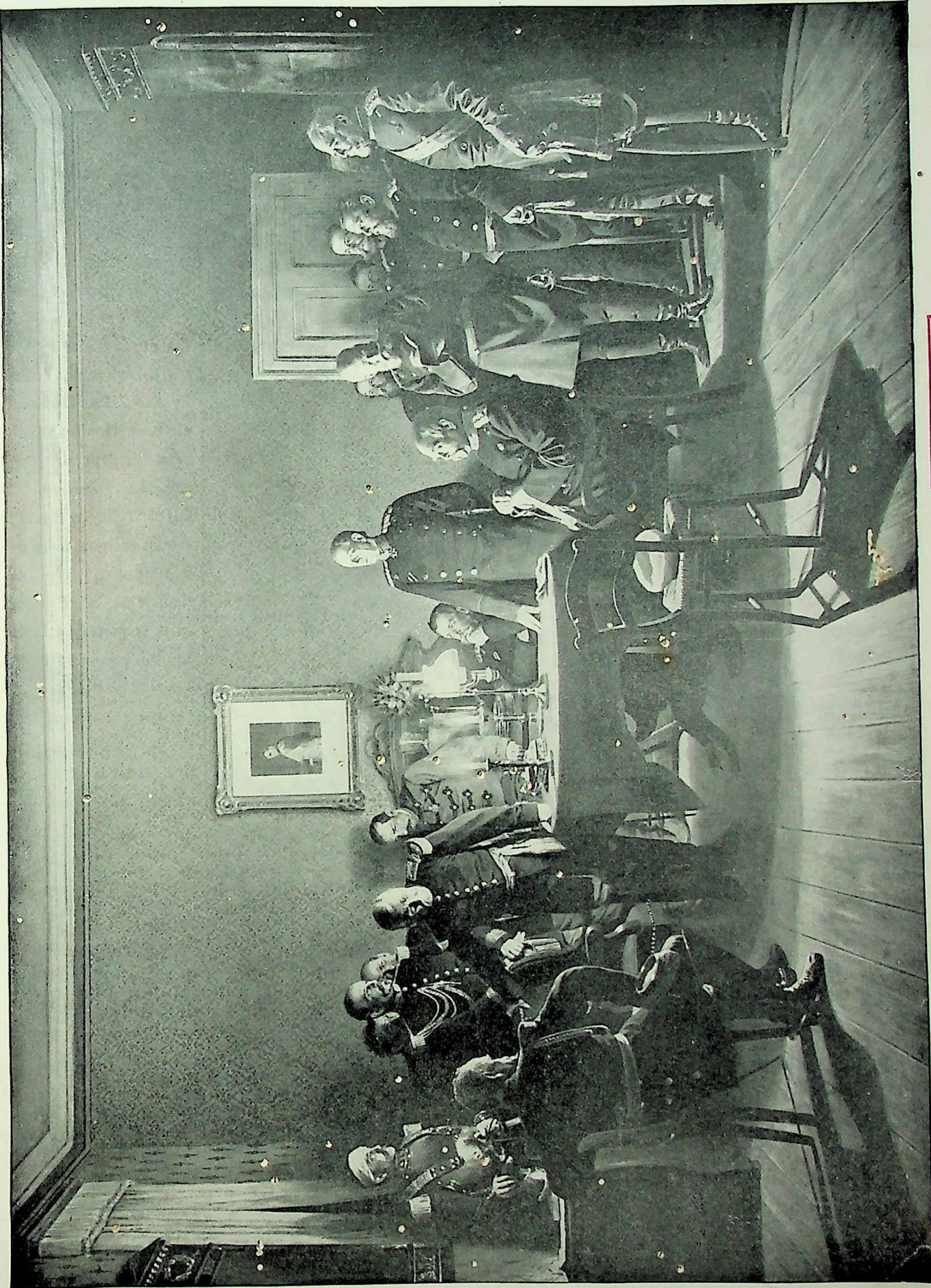
ONE OF THE HISTORICAL PICTURES IN THE TENTH EDITION.

is by J. W. Headlam, M.A.

Wilkinson, M.A.

The Article on NAPOLEON in Vol. 17 is by Prof. Sir John Seeley.

"CAPITULATION OF SEDAN." By ANTON VON WERNER.

(From a Photograph by the Berlin Photographic Co.)

The Life of BISMARCK is by J. W. Headlam, M.A.

The Tenth Edition of the *Encyclopædia Britannica* contains reproductions of Meissonier's "1814" (see p. 109), Neuville's "Les Dernières Cartouches," Détaille's "The Dream," besides numerous portraits, landscapes, and subject-pictures of world-wide celebrity.

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The *Encyclopædia Britannica* contains examples of the methods of caricature in different countries, which should be studied in connexion with the narratives of the famous caricaturists.

"Dropping the Pilot." By Sir John Tenniel.

(By permission of the Proprietors of "Punch.")

On the preceding page we have seen the Iron Chancellor at one of those moments of historical triumph which make the war of '70 a narrative unsurpassed for the depth of its interest. On this page is a cartoon by Sir John Tenniel of a later incident, also crystallized in the annals of modern Germany. The fall of Wolsey or Strafford cannot excite a more real and lasting sympathy than that of Bismarck as it is portrayed by the English cartoonist in the annexed drawing. The German Emperor, by the omnipresent strength and freshness of his personality, is a figure never long absent from the public view; but the memory of the great Empire-maker whom he dismissed is inextinguishable. And it will never be forgotten with what critical veneration the "Pilot" strewed roses on the tomb of the old Emperor William before he surrendered the seals of office and left Berlin.

The wealth and variety with which one period of German History has been illustrated by word and picture in the Tenth Edition has been shown on this and the preceding pages. By the judicious choice of articles and of an appropriate order in which to read them, every student may pursue a historical narrative of his own making in the Volumes of the *Encyclopædia Britannica*. A glance through the biography of the German Emperor in Volume 33 will add yet another interest to the above cartoon.

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For the titles of a few of the articles on Art in the Tenth Edition, see p. 114 of this pamphlet.

Scarcely had the Bill been carried when a series of events took place which still more fully turned public attention to colonial affairs, and seemed to justify the action of the Government. The war between the United States and Spain showed how necessary an efficient fleet was under modern conditions, and also caused some feeling of apprehension for the future arising from the new policy of extension adopted by the United States. The Government was, however, enabled to acquire by purchase the Caroline Islands from Spain. This was hardly accomplished when events in South Africa occurred which made the nation regret that their fleet was not sufficiently strong to cope with that of Great Britain. The Government used with great address the bitter irritation against Great Britain which had become one of the most deep-seated elements in modern German life. . . . .

. . . . The sympathy which the events of 1896 and 1899 awakened for the Boers caused all these feelings, which had long been growing, to break out in a popular agitation more widespread than any since the foundation of the empire. It was used by the Nationalist parties, in Austria as well as in Germany, to spread the conception of Pan-Germanism; the Boers as Low Germans were regarded as the representatives of Teutonic civilization, and it seemed possible that the conception might be used to bring about a closer friendship, and even alliance, with Holland. In 1896 the Emperor, by despatching a telegram of congratulation to President Kruger after the collapse of the Jameson Raid, had appeared to identify himself with the national feeling. When war broke out in 1899 it was obviously impossible to give any efficient help to the Boers, but the Government used the opportunity to make an advantageous treaty by which the possession of Samoa was transferred to Germany, and did not allow the moment to pass without using it for the very practical purpose of getting another Bill through the Reichstag by which the navy was to be nearly doubled. Some difficulties which arose regarding the exercise by the British Government of the right of search for contraband of war were also used to stimulate public feeling. The Navy Bill was introduced in January 1900. There were some criticisms of detail, but the passing of the Bill was only a matter of bargaining. Each party wished in return for its support to get some concessions from the Government. The Agrarians asked for restrictions on the importation of food; the Centre for the Lex Heinze and the repeal of the Jesuit law; the Liberals for the right of combination.

Pro-Boer movement.

Navy Bill 1900.

The murder of the German ambassador, Baron von Ketteler, at Peking in 1900 compelled the Government to take a leading part in the joint expedition of the Powers to China. A force of over 20,000 men was organized by voluntary enlistment from among the regular army; and the supreme command was obtained by the Emperor for Count von Waldersee, who had succeeded Moltke as chief of the staff. The Government was, however, sharply criticised for not first consulting the Reichstag in a matter involving the first military expedition since the foundation of the Empire. It was desirable in such circumstances that a younger and more vigorous statesman than Prince Hohenlohe should be placed at the head of affairs before the Reichstag met; and on 17th October he resigned, and was succeeded as Chancellor by Count von Bülow, the Foreign Secretary.

[*The Tenth Edition of the Encyclopædia Britannica contains Articles on* EUROPE *(18 pages in length), and each separate country,* RUSSIA, ITALY, FRANCE, *&c., &c. Such Articles as* KRUGER, JAMESON, BÜLOW, HOHENLOHE-SCHILLINGSFÜRST, *will be read with particular interest in connection with the above extract.*]

THE MASTER-BUILDER OF GERMANY.

From the Article (5 pages) by J. W. HEADLAM, M.A.

Bismarck.— . . . . . . The war of 1866 is more than that of 1870 the crisis of modern German history. It finally settled the controversy which had begun more than a hundred years before, and left Prussia the dominant power in Germany. It determined that the unity of Germany should be brought about not by revolutionary means as in 1848, not as in 1849 had been attempted by voluntary agreement of the princes, not by Austria, but by the sword of Prussia. This was the great work of Bismarck's life; he had completed the programme foreshadowed in his early speeches, and finished the work of Frederick the Great. . . . .

It is necessary, then, to keep in mind the general situation in considering Bismarck's conduct in the months immediately preceding the war of 1870. In 1867 there was a dispute regarding the right to garrison Luxemburg. Bismarck then produced the secret treaties with the southern states, an act which was, as it were, a challenge to France by the whole of Germany. During the next three years the Ultramontane party hoped to bring about an anti-Prussian revolution, and Napoleon was working for an alliance with Austria, where Beust, an old opponent of Bismarck's, was chancellor. Bismarck was doubtless well informed as to the progress of the negotiations, for he had established intimate relations with the Hungarians. The pressure at home for completing the work of German unity was so strong that he could with difficulty resist it, and in 1870 he was much embarrassed by a request from Baden to be admitted to the confederation, which he had to refuse. It is therefore not surprising that he eagerly welcomed the opportunity of gaining the goodwill of Spain, and supported by all the means in his power the offer made by Marshal Prim that Prince Leopold of Hohenzollern should be chosen king of that country. It was only by his urgent and repeated representations that the prince was persuaded against his will to accept. The negotiations were carried out with the greatest secrecy, but as soon as the acceptance was made known the French Government intervened and declared that the project was inadmissible. Bismarck was away at Varzin, but on his instructions the Prussian Foreign Office, in answer to inquiries, denied all knowledge or responsibility. This was necessary, because it would have caused a bad impression in Germany had he gone to war with France in support of the prince's candidature. The king, by receiving Benedetti at Ems, departed from the policy of reserve Bismarck himself adopted, and Bismarck (who had now gone to Berlin) found himself in a position of such difficulty that he contemplated resignation. The French, however, by changing and extending their demands, enabled him to find a cause of war of such a nature that the whole of Germany would be united against French aggression. France asked for a letter of apology, and Benedetti personally requested from the king a promise that he would never allow the candidature to be resumed. Bismarck published the telegram in which this information and the refusal of the king were conveyed, but by omitting part of the telegram made it appear that the request and refusal had both been conveyed in a more abrupt form than had really been the case. But even apart from this, the publication of the French demand, which could not be complied with, must have brought about a war. . . . .

[*Biographies of all the greatest European statesmen are to be found in the Encyclopædia Britannica:* PITT, BEACONSFIELD, THIERS, GAMBETTA, GORTCHAKOFF, COUNT TAAFFE, SAGASTA, CRISPI, *&c., &c.*]

For the titles of a few of the Articles on Philosophy in the Tenth Edition, see p. 179 of this pamphlet.

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An Illustration of the Index.

LOVERS of history will constantly come across the term Pragmatic Sanction, used to denote a variety of enactments both resembling and differing from one another. After a short period of vague indifference, the reader will wish to establish for himself the precise meaning of the term and the various usages of which it is capable. He has but to look at the adjoining fragment of the Index to the Tenth Edition and in a few minutes he will be able to convert a dim notion into a clear conception. Every entry in this Index is like a chink in the door through which a man may peer and get a rapid glimpse of the pigeon-hole in which lies the object of his quest.

AN EPOCH IN THE WORLD'S HISTORY.

From the Article (18 pages) by J. BASS MULLINGER, M.A., Librarian of St John's College, Cambridge.

Reformation.— . . . . . . It is evident, therefore, that the Reformation, when regarded from a fairly comprehensive point of view, must appear as a highly complex movement carrying in itself the elements of further controversy and conflict. Even the theory which would seem to afford the most satisfactory solution of its varied phenomena—that which teaches us to look upon it as a Teutonic revolt, intellectual no less than religious, against the traditions which the Latin Church in the course of centuries had invented and imposed on the faith and habits of thought of Western Christendom —often fails us as a clue to its widely different manifestations, and other disturbing causes seem to forbid the effort to refer them to any general principle. The character and policy of the reigning Roman pontiff, the jealousies and divergent interests of the several European states and the special aims of their several rulers, the spell which imperial institutions and traditions long continued to exercise over the minds of all but the most advanced and independent thinkers, are all important factors in the movement. If, however, we endeavour to assign the causes which prevented the Reformation from being carried even to but partial success long prior to the 16th century, we can have no difficulty in deciding that foremost among them must be placed the manner in which the mediæval mind was fettered by a servile regard for precedent. To the men of the Middle Ages, whether educated or uneducated, no measure of reform seemed defensible which appeared in the light of an innovation. Precedent was the standard whereby every authority, lay or clerical, was held to be bound; and to this rule the only exceptions were a general council and the supreme pontiff. Even Gregory IX. or Clement V., when he assumed to promulgate additions to the existing code of the Universal Church, was understood to do so simply in his capacity of infallible expounder of essential and unalterable doctrine; while no reform, however seemingly expedient or however recommended by its abstract merits, was held to be justifiable if it could be shown to be in conflict with ancient and authoritative tradition. The Reformers themselves always maintained that the doctrines which they enforced rested on Scriptural precedent and primitive example. Their assertion was frequently challenged by their antagonists; and it may reasonably be doubted whether even Luther or Calvin could have commanded any considerable following had not their doctrinal teaching been combined with a demand for a reformation of discipline which rested on undeniable precedent, and to which the circumstances of the time imparted new and irresistible force,—a force, however, which had been long accumulating and had been derived in no small measure from the blind obstinacy of the Roman see in times long antecedent.

The existence long before the 16th century of a strong desire to bring about a reformation of discipline within the church itself is attested by evidence which it will suffice to pass by with little more than an allusion. Among the most notable instances are those afforded by the rise of the Dominican and Franciscan orders in the 13th century and of the Brethren of St Jerome (or the Brethren of the Common Life) in the 14th century,—efforts based upon general conviction, which resulted in spontaneous combinations. Similar in origin, though more strictly ecclesiastical in character, were the designs of the great councils which successively assembled at Pisa (1409), at Constance (1414), and at Basel (1431). Among those who were distinguished in these assemblies by their strenuous advocacy of reform, Pierre d'Ailly and his pupil Jean Charlier de Gerson, both successively chancellor of the university of Paris, and Nicholas de Clémenges, archdeacon of Bayeux, were especially conspicuous. Each alike upheld in the plainest language the superiority of a general council to the pope, and the obligation that rested on such a body to address itself to the task of church reform whenever the necessity might arise, and the supreme pontiff himself be found either incapable of such a labour or unwilling to initiate it. Of the widespread necessity for such reform, as shown by the condition of the clergy and the monasteries, the remarkable treatise by Nicholas de Clémenges, *De Corrupto Ecclesiæ Statu*, affords alone sufficient evidence. By Michelet this powerful tractate has been compared, for its vigour and the effect which it produced, to the *De Captivitate Ecclesiæ Babylonica* of Luther; and it is a striking proof of the deep-rooted corruption of the whole church that such flagrant abuses should have continued to exist for another century with little or no abatement. Clémenges deplores in the strongest terms the state of the church in his day,—a condition of appalling degeneracy, which he ascribes mainly to the increase in wealth and luxury that had followed upon the development of a worldly spirit in its midst. . . . We can feel no surprise at finding that in the 16th century Clement VII. thought it necessary to place this burning diatribe by a great doctor of the church in the *Index Expurgatorius*. A few years later we find the evils to which Clémenges called attention emphasised by one of the most eminent ecclesiastics of the age,—the Cardinal Julian Cesarini. . . .

[*The modern aspects of the great ecclesiastical controversy are dealt with at length in the Articles* CHURCH OF ENGLAND, ROMAN CATHOLIC CHURCH, VATICANISM, ANGLICAN ORDERS *(see next page)*, CONFESSION, ANGLICAN COMMUNION, *&c.*]

The Encyclopædia Britannica is not only a book for reference in doubt, but an invaluable solace in a dull hour.

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AN HISTORICAL CONTROVERSY.

From the Article by the Rev. W. H. FRERE.

Anglican Orders.— . . . . . . (i.) The difficulty began with the repudiation of papal supremacy by Henry VIII., when, according to Roman theory, the English Church became schismatical and its orders marred by the taint of schism. A further alienation took place when the Edwardine English ordinal of 1550 and 1552 superseded the old Latin pontifical, and orders were thereupon conferred by a newly-reformed rite. At Mary's accession the pontifical was restored, and eventually Cardinal Pole reconciled the English Church with the Holy See. The exact effect of his action is a matter of controversy. There is no question that he reconciled the schism to the Pope's satisfaction, and therefore that objection to the Henrician and Edwardine orders came to an end; but it is a disputed question both how he was authorized by his papal faculties to deal with the orders conferred by the Prayer Book rite and, also, how in fact he did deal with them. Historical inquiry shows that for a short period before Pole's advent a small number of reordinations took place, but subsequently they almost entirely ceased; and it is contended that in other cases the orders were tacitly allowed, possibly after some slight supplemental ceremony, and that Pole's instructions were designedly vague. The contention is supported by the fact that, while a vast number of parochial clergy were deprived in 1553-54, no case is known of a deprivation on the ground of Edwardine orders. In answer to this Anglican contention an attempt is made to extract from Pole's instructions a definite condemnation of the Edwardine orders, and to maintain that all such clergy as were allowed to minister in Mary's reign must have been reordained. When the Prayer Book was restored under Elizabeth the question returned again, and there is no doubt that since the latter half of the 16th century the Roman Catholics have continually treated Anglican orders as null and void. Still there was no adverse decision. The orders were vaguely attacked, and after 1570 reordinations took place abroad, and in 1608 at Rome; but there was little definite justification offered for this till the Nag's Head fable was invented in 1604, and it was seriously maintained that Archbishop Parker—the main channel of Elizabethan orders—had had no better consecration than a mock ceremony in a tavern. This fable has had great influence on the controversy. In 1616 doubts were cast on the consecration of Barlow, Parker's chief consecrator. There was more justification for this, but both these historical objections have broken down. They were not, as it now appears, seriously entertained at the first official inquiries into the question at Rome in 1685 and 1704; and though they survived until recently as large factors in popular controversy, they bid fair now to disappear, and the battle is shifted to other ground. . . . .

[*In connection with this extract see also the article* POPEDOM *(23 pages), and the portion of the biography of* Archbishop PARKER *quoted on p. 36 of this Review.*]

GERMAN STATES IN THE THIRTY YEARS' WAR.

From the Article (73 pages) by JAMES SIME, M.A.

Germany.— . . . . . . The effect of the Thirty Years' War on the national life was disastrous. It had not been carried on by disciplined armies, but by hordes of adventurers whose sole object was plunder. The cruelties they inflicted on their victims are almost beyond conception. Before the war the population was about twenty millions; after it the number was probably five or seven millions, and cannot have been more than ten. Whole towns and villages were laid in ashes, and vast districts turned into deserts. Churches and schools were closed by hundreds, and to such straits were the people often reduced that cannibalism is said to have been not uncommon. Industry and trade were so completely paralyzed that in 1635 the Hanseatic League was virtually broken up, because the members, once so wealthy, could not meet the expenditure it involved. The population was not only impoverished and reduced in numbers, but broken in spirit. It lost confidence in itself, and for a time effected in politics, literature, art, and science little that is worthy of serious study.

National life.

1648-1724.

The princes knew well how to profit by the national prostration. The local diets, which, as we have seen, formed a real check on petty tyranny, and kept up an intimate relation between the princes and their subjects, were nearly all destroyed. Those which remained were injurious rather than beneficial, since they often gave an appearance of lawfulness to the caprices of arbitrary sovereigns. After the Thirty Years' War it became fashionable for the heirs of principalities to travel, and especially to spend some time at the court of France. Here they readily imbibed the ideas of Louis XIV., and in a short time every petty court in Germany was a feeble imitation of Versailles. Before the Reformation, and even for some time after it, the princes were thorough Germans in sympathies and habits; they now began to be separated by a wide gulf from their people. Instead of studying the general welfare, they cruelly wrung from exhausted states the largest possible revenue to support a lavish and ridiculous expenditure. The pettiest princeling had his army, his palaces, his multitudes of household officers; and most of them pampered every vulgar appetite without respect either to morality or decency. Many nobles, whose lands had been wasted during the war, flocked to the little capitals to make their way by contemptible court services. Beneath an outward gloss of refinement these nobles were, as a class, coarse and selfish, and they made it their chief object to promote their own interests by fostering absolutist tendencies. Among the people there was no public opinion to discourage despotism; the majority accepted their lot as inevitable, and tried rather to reproduce than to restrain the vices of their rulers. Even the churches offered little opposition to the excesses of persons in authority, and in many instances the clergy, both Protestant and Catholic, acquired an unenviable notoriety for their readiness to overlook or condone actions which outraged the higher sentiments of humanity. In the free imperial cities there was more manliness of tone than elsewhere, but there was little of the generous rivalry among the different classes which had once raised them to a high level of prosperity. Most of them resigned their liberties into the hands of oligarchies, and others allowed themselves to be annexed by ambitious princes. . . . .

The princes.

The cities.

[*The Article* SCHILLER *in the Tenth Edition contains a critical account of the poetic drama dealing with Wallenstein and the Thirty Years' War.*]

The following are only a few of the articles in the Tenth Edition which bear directly on subjects closely connected with the above column from the article GERMANY. Some notion of the scope of the Encyclopædia Britannica may be gathered from this random selection:—

HANSEATIC LEAGUE. LOUIS XIV. VERSAILLES. REFORMATION. OLD CATHOLICS. WALLENSTEIN.

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Right Hon. James Bryce, M.P., P.C., D.C.L., writes on THEODORA in Vol. 23.

THE GREAT PROTECTOR.

From the Article (9 pages) by ALEXANDER NICOLSON, LL.D., Advocate, Sheriff-Substitute of Renfrewshire.

Cromwell.— . . . . . . The inevitable rupture at length took place, and the king and Parliament made their appeal to the sword. On 12th January 1642 Charles left Whitehall to return no more till the day of his execution. Military preparations on both sides began; and now, at the mature age of forty-three, Oliver Cromwell girded on his armour, and, with his eldest son Oliver by his side, left his quiet home and farm to fight for England's liberty. With no knowledge of the art of war, but much of himself, of men, and of the Bible, this stout English squire had made up his mind in no hasty or factious spirit to draw the sword against his king, and venture his life for what he believed with his whole heart and soul to be the cause of "freedom and the truth in Christ." Out of his moderate fortune he subscribed £500 "for the service of the commonwealth;" £100 more he expended on arms; and during the summer he was actively engaged in raising volunteers. His first exploit was to seize the magazine in the castle at Cambridge, and prevent the carrying away of the university plate to help the royal exchequer. In September he received his commission as captain of a troop of horse. In the first campaign the royal troops generally had the advantage. Cromwell already knew in his own person wherein lay the strength of Puritanism, and the secret of its success. He spoke on the subject to his cousin Hampden. "Old decayed serving men and tapsters," and such "base mean fellows," he said, "could never encounter gentlemen and persons of quality." To match "men of honour" they must have "men who had the fear of God before them," and would "make some conscience of what they did." "A few honest men," he elsewhere said, "are better than numbers." Mr Hampden thought his cousin "talked a good notion, but an impracticable one." To turn "good notions" into facts, however, was the characteristic work of Cromwell,—"impracticable" being a word for which we may suppose him to have had as little tolerance as Napoleon. On this principle of selection accordingly he gradually enlisted around him a regiment of 1000 men, whose title of "Ironsides" has become famous in history. "They never were beaten." "Had his history," says Mr Forster, "closed with the raising and disciplining of these men, it would have left a sufficient warrant of his greatness to posterity." . . . .

[*The Encyclopædia Britannica contains biographical notices of all the great figures in the world's history: FREDERICK THE GREAT, PETER THE GREAT, CATHARINE OF RUSSIA, PHILIP II. OF SPAIN, PRYNNE, STRAFFORD, BUCKINGHAM, CLIVE, WELLINGTON, NAPOLEON, WASHINGTON, &c., &c.*]

THE SOVEREIGN ARCHITECT OF PRUSSIA.

From the Article (4 pages) by JAMES SIME, M.A., author of "Lessing" and of "A History of Germany."

Frederick II. (1712–1786).— . . . . . . The battle of Kunersdorf, fought on August 12, 1759, was the most disastrous to him in the course of the war. He had here to contend both with the Russians and the Austrians; and although at first he had some success, his army was in the end completely broken. "All is lost. Save the royal family," he wrote to his minister Friesenstein; "the consequences of this battle will be worse than the battle itself. I shall not survive the ruin of the Fatherland. Adieu for ever!" But he soon recovered from his despair, and in 1760 gained the important victories of Liegnitz and Torgau. He had now, however, to act on the defensive, and, fortunately for him, the Russians, on the death of the Tsarina Elizabeth, not only withdrew in 1762 from the compact against him, but for a time became his allies. On October 29 of that year he gained his last victory over the Austrians at Freiberg. Europe was by that time sick of war, every power being more or less exhausted. The result was that, on February 15, 1763, a few days after the conclusion of the peace of Paris, the treaty of Hubertusburg was signed, Austria confirming Prussia in the possession of Silesia. . . . .

The Emperor Joseph II., being of an ardent and impulsive nature, greatly admired Frederick, and visited him at Neisse, in Silesia, in 1769, a visit which Frederick returned in Moravia, in the following year. The young emperor was frank and cordial; Frederick was more cautious, for he detected under the respectful manner of Joseph a keen ambition that might one day become dangerous to Prussia. Ever after these interviews a portrait of the emperor hung conspicuously in the rooms in which Frederick lived, a circumstance on which some one remarked. "Ah yes," said Frederick, "I am obliged to keep that young gentleman in my eye." Nothing came of these suspicions till 1777, when, after the death of Maximilian Joseph, elector of Bavaria, without children, the emperor took possession of the greater part of his lands. The elector palatine, who lawfully inherited Bavaria, came to an arrangement, which was not admitted by his heir, the Duke of Zweibrücken, afterwards King Maximilian I. of Bavaria. The latter appealed to Frederick, who, resolved that Austria should gain no unnecessary advantage, took his part, and brought pressure to bear upon the emperor. Ultimately, greatly against his will, Frederick felt compelled to draw the sword, and in July 1778 crossed the Bohemian frontier at the head of a powerful army. No general engagement was fought, and after a great many delays the treaty of Teschen was signed on the 13th May 1779. Austria received the circle of Burgau, and consented that the king of Prussia should take the Franconian principalities. Frederick never abandoned his jealousy of Austria, whose ambition he regarded as the chief danger against which Europe had to guard. He seems to have had no suspicion that evil days were coming to France. . . . . . .

[*For an interesting picture of the great Frederick and his Court see p. 129 of this Review.*]

A SERIES OF REVOLUTIONS.

From the Article (180 pages) by HENRI GAUSSERON, the Very Rev. Dean KITCHIN, HENRY NICOL, and GEORGE SAINTSBURY, M.A.

France.— . . . . . This development of a warlike tendency in the republic, coupled with the fall of the king, decided the policy of England, which hitherto had shown some sympathy with France. The ferment of opinion in England, roused by the revolutionary movement and republican ideas, was much stilled by the news of the death of Louis XVI.; and Pitt with great ability both used the feeling in favour of the Tory Government at home and tempted the French ministers to declare war against England (1st February 1793). Pitt at once proclaimed it, by a happy

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phrase, to be "the war of armed opinions," and drew tighter his friendly relationships with the European courts. All ancient lines of policy were entirely obliterated by the new phenomenon. Spain and Portugal agreed; Austria ceased to be jealous of Prussia; Russia and Prussia found the moment good for a further partition of Poland; the only neutral powers remaining in Europe were Sweden and Denmark, Switzerland, Venice, and Turkey. The Mountain did not quail before so great a display of force. "France shall be an armed camp," and every Frenchman a soldier; "conquer or die," the watchword of an united people; the "principles of the Revolution," a new religion for which men of good will should devote themselves. The enthusiasm was great; a levy of 300,000 men was voted at once; the revolutionary propaganda filled Belgium, and alienated the friendly feeling there by its violence. They had also ruined Dumouriez's plans, and he, with an ill-equipped army, and feeling that hostility was rising against him at Paris, set himself to recover ground by a bold attempt to conquer Holland. He was caught by the prince of Coburg at Neerwinden, and defeated after a vehement battle (18th March 1793). . . . .

. . . .

M. Thiers begins his public life.

At this time a young journalist from Marseilles, Thiers, was editor of the *National;* under his fearless leadership the "fourth estate" made its first collective revolt against illegal power, and signed a vigorous protest against the ordinances. It is the beginning of that wholesome influence of the press on modern politics of which the history has yet to be written, because its limits have not yet been reached. Men waited breathlessly to see what steps would follow such an insurrection of opinion against power. On the 27th of July it was announced that Marshal Marmont, although he disapproved of the measures agreed on, and did not sympathize with the five ordinances, had been charged with the defence of the capital. Then insurrection broke out at once, and the "Revolution of the three days of July" began. On the 27th the barricades raised by the citizens were forced and the streets cleared; on the 28th the insurgents, not abashed by their defeat, seized the Hôtel de Ville, and hoisted the tricolour. . . . .

1830. The three days of July.

. . . .

The agitation of the country at first was seen chiefly in speeches made at fervid banquets. When the session of 1848 opened, the opposition, led by Odillon-Barrot, showed itself strong and resolute; the interference of Government against a popular banquet in Paris led to the outbreak of the Revolution (22nd February 1848). On the 23rd the national guard took part with the populace against the troops, and the soldiers, unwilling to attack them, hesitated, and the day passed by. Guizot now yielded, and sent in his resignation; it was, however, too late; that evening, the troops having fired on and killed some of the mob, a ghastly procession with the bodies of the slain passed through the streets. The excitement redoubled; the troops refused to act; Louis Philippe even called on Thiers to form a liberal ministry with Odillon-Barrot. A proclamation was issued stating that the troops were ordered to withdraw. Forthwith the regular soldiers laid down their arms, and the people with the national guards marched on the Tuileries. Louis Philippe now abdicated in favour of his grandson the count of Paris, and, assuming the name of Mr William Smith, closed an inglorious reign by an inglorious flight in a hackney cab. . . . .

1848. The revolution of 1848.

[*The history of every European country is dealt with at length in the Encyclopædia Britannica.*]

1848 IN ENGLAND.

From the Article (27 pages) by SIR SPENCER WALPOLE, *K.C.B.*

History.— . . . . . In the meanwhile the difficulties which the Government was experiencing from the Irish famine had been aggravated by a grave commercial crisis in England. In the autumn of 1847 a series of failures in the great commercial centres created a panic in the City of London, which forced consols down to 78, and induced the Government to take upon itself the responsibility of suspending the Bank Charter Act. That step, enabling the directors of the Bank of England to issue notes unsecured by bullion, had the effect of gradually restoring confidence. But a grave commercial crisis of this character is often attended with other than financial consequences. The stringency of the money market increases the distress of the industrial classes by diminishing the demand for work; and when labour suffers, political agitation flourishes. Early in 1848, moreover, revolutions on the Continent produced a natural craving for changes at home. Louis Philippe was driven out of Paris, the emperor of Austria was driven out of Vienna, the Austrian soldiery had to withdraw from Milan, and even in Berlin the crown had to make terms with the people. While thrones were falling or tottering in every country in Europe, it was inevitable that excitement and agitation should prevail in Great Britain. The Chartists, reviving the machinery which they had endeavoured to employ in 1839, decided on preparing a monster petition to Parliament, which was to be escorted to Westminster by a monster procession. Their preparations excited general alarm, and on the invitation of the Government no less than 170,000 special constables were sworn in to protect life and property against a rabble. By the judicious arrangements, however, which were made by the duke of Wellington, the peace of the metropolis was secured. The Chartists were induced to abandon the procession which had caused so much alarm, and the monster petition was carried in a cab to the House of Commons. There it was mercilessly picked to pieces by a select committee. It was found that, instead of containing nearly 6,000,000 signatures, as its originators had boasted, less than 2,000,000 names were attached to it. Some of the names, moreover, were obviously fictitious or even absurd. The exposure of these facts turned the whole thing into ridicule, and gave Parliament an excuse for postponing measures of organic reform which might otherwise have been brought forward. . . . .

Chartism.

[*The Tenth Edition also contains separate Articles on* BRITISH EMPIRE, QUEEN VICTORIA, ENGLISH LAW, ENGLISH LITERATURE, ENGLISH BIBLE, CHURCH OF ENGLAND, ENGLAND AND WALES, *&c., &c.*]

CHAMPIONS OF YOUNG ITALY.

From the Article (24 pages) by JOHN ADDINGTON SYMONDS.

Italy.— . . . . Garibaldi came from Nice, and was a child of the people. Cavour was born in the midst of that stiff aristocratical society of old Piedmont which has been described so vividly by D'Azeglio in his *Ricordi.* The Piedmontese nobles had the virtues and the defects of English country squires in the last century. Loyal, truthful, brave, hard-headed, tough in resistance, obstinately prejudiced, they made excellent soldiers, and were devoted servants of the crown. Moreover, they hid be-

Professor P. Villari writes on MEDICI in Vol. 15.

It was said of Lord Macaulay (see his articles on GOLDSMITH, JOHNSON, &c.), "What he doesn't know isn't worth knowing." So, also, what knowledge is not contained within the Tenth Edition is not worth acquiring.

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neath their stolid exterior greater political capacity than the more genial and brilliant inhabitants of Southern and Central Italy. Cavour came of this race, and understood it. But he was a man of exceptional quality. He had the genius of statesmanship,—a practical sense of what could be done, combined with rare dexterity in doing it, fine diplomatic and parliamentary tact, and noble courage in the hour of need. Without the enthusiasm, amounting to the passion of a new religion, which Mazzini inspired, without Garibaldi's brilliant achievements, and the idolatry excited by this pure-hearted hero in the breasts of all who fought with him and felt his sacred fire, there is little doubt that Cavour would not have found the creation of United Italy possible. But if Cavour had not been there to win the confidence, support, and sympathy of Europe, if he had not been recognized by the body of the nation as a man whose work was solid and whose sense was just in all emergencies, Mazzini's efforts would have run to waste in questionable insurrections, and Garibaldi's feats of arms must have added but one chapter more to the history of unproductive patriotism. While, therefore, we recognize the part played by each of these great men in the liberation of their country, and while we willingly ignore their differences and disputes, it is Cavour whom we must honour with the title of the Maker of United Italy. . . . .

[*This brief extract is a portion of the historical part of the Article* ITALY (82 *pages*).]

THE FALL OF THE BYZANTINE EMPIRE.

From the Article (73 pages) by JAMES DONALDSON, LL.D., *Principal of St Andrews University.*

Greece.— . . . . . . The first step towards a permanent settlement of the Turks in Europe was made in 1354, when Gallipoli was occupied by Orchan's son, Suleiman. Seven years from this time Amurath I. made himself master of Adrianople, and before his death that sultan saw the Greek emperor his vassal and tributary. It seemed now as if the fall of Constantinople could not long be delayed, when, with one of those turns of the wheel of fortune which form the surprises of history, Bajazet, the most powerful of all the Ottoman rulers, was defeated and taken prisoner by Timur the Tartar at the battle of Angora (1402), and civil war setting in between his sons gave the Eastern empire a new lease of existence. But within twenty years again the capital was besieged by Amurath II., though he failed to take it, owing partly to the strength of its fortifications, and partly to a rebellion that broke out in his family. The empire was now reduced to Thessalonica, a part of the Peloponnesus, the city of Constantinople, and a few neighbouring towns.

End of the Empire, 1453.

In the midst of the gloom which hangs over this last period, it is consoling to find a ray of light that illumines its closing scene, in the heroic end of the last Constantine. The story is a sad one. The city was beleaguered by land and sea by the warlike hosts of Mahomet II.; no further succour could be expected from the West; and the emperor, who had adopted the Latin rite, was thereby estranged from the great mass of his subjects. But he had determined not to survive his empire, and he died in a manner worthy of the greatest of his predecessors. On the eve of the final assault he rode round the positions occupied by his troops, to cheer them by his presence; and then, having partaken of the eucharist in St Sophia's after the Latin form, and having solemnly asked pardon of the members of his household for any offences, he proceeded to occupy his station at the great breach. There on the following morning, after a desperate resistance, he fell fighting amidst a heap of slain, and the young sultan passed his lifeless body as he rode into the captured city. . . . .

SECTION III.—RECENT HISTORY.

The history of Greece from the fall of Constantinople to the present day suggests a problem of profound historic interest. From the year 1453 till the end of the 18th century almost all the occasions on which the Greek people appear on the page of the historian are occasions on which we read of them that they were butchered or sold into slavery. Records tell only of their annihilation or dispersion. Yet in the commencement of the 19th century this apparently annihilated and dispersed people can summon energy enough to resist the Turks, and although in all probability they would have failed to overcome their oppressors if they had been compelled to struggle unaided, yet the courage and self-devotion which they showed in the conflict were such as to gain for them the sympathies of Europe, and they came forth triumphant. But in reading even of their war for independence we are astonished that a remnant was left. Thousands upon thousands perished, and their victory seemed only less terrible than utter defeat. Yet the spirit of life remained. The kingdom of Greece was established, and within forty years, notwithstanding deplorable mistakes in its management, the population is doubled, and the country becomes consolidated into a constitutional realm. To trace how these events were possible and how they actually came to pass is the task of the historian of Modern Greece.

The external events in this history are necessarily few. Greece was during the most of these centuries under the sway of foreigners, and the external history of Greece is formed merely by episodes in the history of these foreigners. When Mahomet II. became master of Constantinople, he did not thereby become master of the Greek empire. . . .

[*The Encyclopædia Britannica contains at as great or greater length the histories of* ROME (*ancient and modern*), *of* EGYPT, PERSIA, ASSYRIA, *&c., &c.*]

The Federation of the Empire

MR. CHAMBERLAIN's visit to South Africa has marked a departure—none too soon—from the old ideas of the duties of Ministers. If its immediate aim has been the establishment of a prosperous regime in Britain's new colonies, its ultimate value will consist in the fact that it has marked one step further towards the Federation of the Empire. This policy, which has in the last few years become prominent in the minds of all far-seeing statesmen, is discussed at length under the headings "FEDERAL GOVERNMENT" and "BRITISH EMPIRE" in the Tenth Edition of the *Encyclopædia Britannica.*

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LANDMARKS IN HISTORY.

From the Article (104 pages) by Dr RAWSON GARDINER, D.C.L., LL.D., Ph.D.

The article on PHILIP II. in Vol. 18 is by Dr. Mandell Creighton (late Bishop of London).

England.— . . . . . . One point which cannot be too strongly insisted on at this stage is that the Church of England which was founded by Augustine has nothing whatever to do with the early British Church. In after times certain British dioceses submitted to English ecclesiastical rule, and that is all; . . . . . . but the historical fact cannot be altered to please any man. The Church of England is the daughter of the Church of Rome. She is so perhaps more directly than any other Church in Europe. England was the special conquest of the Roman Church, the first land which looked up with reverence to the Roman pontiff, while it owed not even a nominal allegiance to the Roman Cæsar. . . . .

No British share.

. . . .

It was also doubtless owing to direct Christian influence that the early jurisprudence of England came to differ in one singular point from that of other Teutonic nations. The wager of battle, an original Teutonic institution, one which was brought again into England in later times, seems to have been altogether disused between the conversion and the Norman conquest. It has an English name, the *ornest;* but it is quite unknown to English law or English usage. Its place is taken by the direct appeal to the judgment of God in the form of the ordeal. The divine power, it was held, would directly interfere to save the innocent and to punish the guilty. We need not suppose that the ordeal itself was an invention of Christian teachers. The same idea may be found in many customs in other parts of the world. But it must be owing to direct Christian teaching that the judgment by hot iron or hot water altogether drove out the more warlike appeal to the judgment of battle, so that this last came in again in after times in the guise of a foreign innovation. . . . .

. . . .

We may safely set down the great plague of 1349, known as the Black Death, as the greatest of all social landmarks in English history. While the chivalrous king was keeping the feast of the foundation of the Order of the Garter, half the inhabitants of his kingdom were swept away by the pestilence. The natural results followed. We have seen that one of the gradual results of the Norman Conquest was to fuse together the churls, the lowest class of freemen, along with the slaves in the intermediate class of villains. By this time personal slavery had pretty well died out; but villainage was still in full force. But various causes—among them the frequent emancipation of the villains—had called into being a class of free labourers alongside of the villains. When the plague cut off so large a proportion of the whole people, labour became scarcer, and higher wages were naturally demanded. Parliament after parliament, beginning in the very year of the Black Death, tried, in the interests of the employers of labour, to keep wages at their old rate. The Good Parliament itself did not shrink from this selfish and impossible attempt. The discontent caused by these statutes, the general stirring of men's minds of which Wickliffe and the Vision of the Ploughman are alike witnesses, led, under the preaching of some of Wickliffe's wilder and fiercer disciples, to the great peasant outbreak of 1381, the insurrection which has chiefly become famous through the story of Wat Tyler. The young king, undoubtedly outstripping his legal powers, promised freedom to all the villains. This promise the next parliament not unnaturally refused to confirm. Two results followed. Though the villains were not at once emancipated, yet from this time villainage gradually died out, as slavery had already died out. Neither institution was ever abolished by law; but all the slaves gradually became villains, all the villains gradually became freemen. By the end of the 15th century, villainage was hardly known, except here and there on ecclesiastical estates. The clergy had always preached the emancipation of the villains as a good work. Yet they were the slowest of all landowners to emancipate their own villains. In this there is no real inconsistency. The layman might do what he would with his own; he might dispense with services owing to himself. Those who were at any moment the members of an ecclesiastical corporation might be held not to have the same right to emancipate their villains, that is, to make away with the rights of the corporation itself. . . . .

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In 1509 Henry VII. died. His eldest surviving son, Henry VIII., who now united the claims of York and Lancaster, succeeded without a breath of opposition. He was the first king since Richard II. who reigned by an undisputed title; and he was, strangely enough, the last king who was formally elected in ancient fashion in the ceremony of his coronation. With him, rather than with his father, a new period opens; or, more accurately still, the new period opens with the second period of Henry VII.'s reign, after all opposition to his title had passed away. When the first Tudor king felt himself safe, the Tudor despotism began. Under the second Tudor king that despotism allied itself with ecclesiastical change, and the 16th century put on its most characteristic aspect.

It was during this period that England came within the range of those general causes of change which were now beginning to affect all Europe. The revival of learning, as it is called, was now spreading from Italy into other lands. The three great inventions which in the course of the 15th century affected the general state of mankind, gunpowder, printing, and the compass, began in the course of the second half of that century to do their work on England also. The Wars of the Roses differ widely, in their military character, from the civil wars of earlier times. The personal displays of chivalry in the field, as well as the older style of fortification, both became useless before the new engines of destruction. But, above all things, it was during this time that, in most parts of Europe, the chief steps were taken towards that general overthrow of ancient liberties which reached its highest growth in the 16th century. Europe was massing itself into a system of powers, greater in extent and smaller in number, than heretofore. The masters of these powers were learning a more subtle policy in foreign affairs than those who went before them, and they were beginning to rest their trust at home on standing armies. We have reached the time of Louis XI. and of Ferdinand of Aragon. While France had grown by the annexation of nearly all its vassal states, and of some states which were not its vassals, the new power of Spain was growing up, to develop in the next period into the gigantic dominion of the house of Austria. Italy, with the mass of its small commonwealths grouped together among a few larger states, some princely, some republican, becomes during this age the battlefield of the rival powers. . . . .

[It is impossible to give more than these samples of the masterly article on the History of England by Dr RAWSON GARDINER, *which forms a portion only of the Article* ENGLAND, *nearly 200 pages long.]*

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For extracts from articles on Biology, see p. 198 of this pamphlet.

THE MODEL REPUBLICS.

From the Article (24 pages) by JOHN ADDINGTON SYMONDS, *M.A.*

Italy.— . . . . . The year 1492 opened a new age for Italy. In this year Lorenzo died, and was succeeded by his son, the vain and weak Piero; France passed beneath the personal control of the inexperienced Charles VIII.; the fall of Granada freed Spain from her embarrassments; Columbus discovered America, destroying the commercial supremacy of Venice; last, but not least, Roderigo Borgia assumed the tiara with the famous title of Alexander VI. . . . .

. . . .

Duel of France and Spain.

The stage was now prepared, and all the actors who were destined to accomplish the ruin of Italy trod it with their armies. Spain, France, Germany, with their Swiss auxiliaries, had been summoned upon various pretexts to partake her provinces. Then, too late, patriots like Machiavelli perceived the suicidal self-indulgence of the past, which, by substituting mercenary troops for national militias, left the Italians at the absolute discretion of their neighbours. Whatever parts the Italians themselves played in the succeeding quarter of a century, the game was in the hands of French, Spanish, and German invaders. Meanwhile, no scheme for combination against common foes arose in the peninsula. Each petty potentate strove for his own private advantage in the confusion; and at this epoch the chief gains accrued to the papacy. Aided by his terrible son, Cesare Borgia, Alexander VI. chastised the Roman nobles, subdued Romagna and the March, threatened Tuscany, and seemed to be upon the point of creating a Central Italian state in favour of his progeny, when he died suddenly in 1503. His conquests reverted to the Holy See. Julius II., his bitterest enemy and powerful successor, continued Alexander's policy, but no longer in the interest of his own relatives. It became the nobler ambition of Julius to aggrandize the church, and to reassume the protectorate of the Italian people. With this object, he secured Emilia, carried his victorious arms against Ferrara, and curbed the tyranny of the Baglioni in Perugia. Julius II. played a perilous game; but the stakes were high, and he fancied himself strong enough to guide the tempest he evoked. Quarrelling with the Venetians in 1508, he combined the forces of all Europe by the league of Cambray against them; and when he had succeeded in his first purpose of humbling them even to the dust, he turned round in 1510, uttered his famous resolve to expel the barbarians from Italy, and pitted the Spaniards against the French. It was with the Swiss that he hoped to effect this revolution; but the Swiss, now interfering for the first time as principals in Italian affairs, were incapable of more than adding to the already maddening distractions of the people. Formed for mercenary warfare, they proved a perilous instrument in the hands of those who used them, and were hardly less injurious to their friends than to their foes. In 1512 the battle of Ravenna between the French troops and the allies of Julius,—Spaniards, Venetians, and Swiss,—was fought. Gaston de Foix bought a doubtful victory dearly with his death; and the allies, though beaten on the banks of the Ronco, immediately afterwards expelled the French from Lombardy. Yet Julius II. had failed, as might have been foreseen. He only exchanged one set of foreign masters for another, and taught a new barbarian race how pleasant were the plains of Italy. As a consequence of the battle of Ravenna, the Medici returned in 1512 to Florence. . . . .

[*This excerpt is from the Article* ITALY, 82 *pages in length.*]

Articles on New Inventions and Discoveries, written by the Inventors and Discoverers themselves for the Encyclopædia Britannica.

THE reader who seeks the knowledge of our time in the Tenth Edition of the *Encyclopædia Britannica* will find something more than authority in the volumes; he will read the story of invention, of travel, and of research in the words of the very men who, by their own labour and enterprise, have made history and added to the knowledge of their age.

Lord Rayleigh, in his article on *Argon*, treats of the new gas he discovered in the atmosphere, the secrets of which were supposed to have been exhausted; and himself describes the course of experiments which led him and Professor Ramsay to its detection. So also Professor Dewar, in contributing the article on *Liquid Gases*, gives his readers the benefit of his creative researches in this marvellous province of modern chemistry, and tells the story of Liquid Air. One of the most important among recent applications of electricity to engineering, *Electric Welding*, is treated by the inventor himself—Professor Thomson, Expert for the General Electrical Company.

The article *Greenland* is contributed by Dr. Nansen. Sir Frederick Lugard writes the article *Uganda*, dealing with the Protectorate of which he was the first administrator. Sir Harry Johnston, whose expedition to Lakes Nyassa and Tanganyika resulted in the founding of the British Central Africa Protectorate, writes on *British Central Africa*; and Count Pfeil, who accompanied Dr. Carl Peters on his romantic expedition, has written on *German East Africa*. Major Baden-Powell, President of the Aeronautical Society, which he re-founded, in his article *Military Kites*, treats of an appliance which he has himself invented. It is a part of the same tradition which prompted the Editors to give the history of the important contemporary movement in decoration (*Arts and Crafts*) to the craftsman and designer who founded the Arts and Crafts Society, Mr. Walter Crane; the subject of *Book-Printing* to Mr. Ricketts of the "Vale Press"; and *Glass*, to Mr. H. J. Powell (of the Whitefriars Works). Such articles, too, as Sir Francis Jeune's on *Divorce* bring another sort of special knowledge to the work.

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THE BERLIN CONGRESS.

From the Article (18 pages) by Sir DONALD MACKENZIE WALLACE, *K.C.I.E., K.C.V.O.*

Europe.— . . . . . . Deceived in her expectations of active support from her two allies, Russia found herself in an awkward position. From a military point of view it was absolutely necessary for her to come to an arrangement either with Austria or with England, because the communications of her army before Constantinople with its base could be cut by these two Powers acting in concert—the land route being dominated by Austria, and the Black Sea route by the British fleet, which was at that time anchored in the Sea of Marmora. As soon, therefore, as the efforts to obtain the support of her two allies against the demands of England had failed, negotiations were opened in London, and on 30th May a Secret Convention was signed by Lord Salisbury and Count Schuwaloff. By that agreement the obstacles to the assembling of the Congress were removed. The Congress met in Berlin on 13th June, and after many prolonged sittings and much secret negotiations, the Treaty of Berlin was signed on 13th July. By that treaty the Preliminary Peace of San Stefano was considerably modified. The big Bulgaria defined by General Ignatief was divided into three portions, the part between the Danube and the Balkans being transformed into a vassal Principality, the part between the Balkans and the Rhodope being made into an autonomous province, with a Christian governor named by the Sultan, with the assent of the Powers, and the remainder being placed again under the direct rule of the Porte. The independence of Montenegro, Servia, and Rumania was formally recognized, and each of these Principalities received a considerable accession of territory. Rumania, however, in return for the Dobrudja, which it professed not to desire, was obliged to give back to Russia the portion of Bessarabia ceded after the Crimean War. In Asia Minor Russia agreed to confine her annexations to the districts of Kars, Ardahan, and Batum, and to restore to Turkey the remainder of the occupied territory. As a set-off against the large acquisitions of the Slav races, the Powers recommended that the Sultan should cede to the kingdom of Greece the greater part of Thessaly and Epirus, under the form of a rectification of frontiers. At first the Sultan refused to act on this recommendation, but in March 1881 a compromise was effected by which Greece obtained Thessaly without Epirus. Bosnia and Herzegovina were to be occupied and administered by Austria-Hungary, and the Austrian authorities were to have the right of making roads and keeping garrisons in the district of Novi-Bazar, which lies between Servia and Montenegro. In all the provinces of European Turkey for which special arrangements were not made in the Treaty, the Porte undertook (Art. 23) to introduce organic statutes similar to that of Crete, adapted to the local conditions. This Article, like many of the subordinate stipulations of the Treaty, has remained a dead letter. We may mention specially Art. 61, in which the Sublime Porte undertook to realize without delay the ameliorations and reforms required in the provinces inhabited by Armenians, and to guarantee their safety against the Circassians and Kurds. Equally unreliable proved the scheme of Lord Beaconsfield to secure good administration throughout the whole of Asia Minor by the introduction of reforms under British control, and to prevent the further expansion of Russia in that direction by a defensive alliance with the Porte. A Convention to that effect was duly signed at Constantinople a few days before the meeting of the Congress (4th June 1878), but the only part of it which was actually realized was the occupation and administration of Cyprus by the British Government. . . . .

Berlin Congress.

Cyprus Convention.

[*In the Article from which this short extract is taken the whole course of modern European politics is reviewed at length.*]

LEGENDARY AND MODERN IRELAND.

From the Articles (58 and 21 pages) by RICHARD BAGNELL, *M.A., D.L.;* W. HALDANE PORTER, *Barrister-at-Law, and* Rev. J. H. BERNARD, *D.D.*

Ireland.— . . . . . . The last of the prehistoric races of Ireland are the so-called Milesians or Scots. The immediate eponym of the new race was Galam, from *Gal*, "valour," a name which might be expressed by the Latin *miles*, a "knight," whence came the names Milesius and Milesians. Among the names which appear in the pedigree, which is of course carried back without a break to Noah, are several worthy of the attention of archæologists, —namely, Breogan, or Bregán, Eber Scot, Góedal Glas, Fenius Farsaid, Allait, Núadu, Sru, and Esru. Breogán, according to the legend, was the grandfather of Galam or Milesius, who founded Brigantia in Spain.

With all their drawbacks, the Irish ethnic legends, when stript of their elaborate details and Biblical and classical loans, express the broad facts of the peopling of Ireland, and are in accordance with the results of archæological investigation. At the earliest period the country was well wooded, and the interior full of marshes and lakes; it was occupied by a sparse population, who appear in later times as "forest tribes" (Tuatha Feda), and were doubtless of the aboriginal (Iberic) race of western and southern Europe. The story of Partholan represents the incoming of the first bronze-armed Celts, who were a Goidelic tribe akin to the later Scots that settled on the sea-coast, and built the fortresses occupying the principal headlands. They formed with the forest tribes the basis of the population in the Early Bronze age. Afterwards came the various tribes known by the general name of Firbolgs. It is not necessary to suppose that all the tribes included under this name came at the same time, or even that they were closely akin. The legend names several tribes, and tells us that they came into Ireland at different places from Britain. The effect of their immigrations now appears to have been that in the north the people were Cruithni, or Picts of the Goidelic branch of the Celts; in the east and centre, British and Belgic tribes; and in Munster, when not distinctly Iberic, of a southern or Gaulish type.

. . . .

In the Middle Ages there were considerable forests in Ireland encompassing broad expanses of upland pastures and marshy meadows, unbroken up to the 7th century by ditch or dyke. There were no cities or large towns at the mouths of the rivers; no stone bridges spanned the latter; stepping stones or hurdle bridges at the fords or shallows offered the only mode of crossing the broadest rivers and connecting the unpaved roads or bridle paths which crossed the country over hill and dale from the principal kingly *dúine* (sing. *dun*). The forests abounded in game—the red deer and wild boar were common; and wolves ravaged the flocks, for the most part unprotected by fences even in comparatively later times. Scattered over the country were numerous small hamlets, composed mainly of wicker cabins, among which were some which might be called houses; other hamlets were composed of huts of the rudest kind. Here and there were some large hamlets or villages that had grown up about groups of houses surrounded by an earthen mound or rampart; similar groups of houses enclosed

The Biography of the late CECIL RHODES is one of the innumerable articles concerning SOUTH AFRICA in the Tenth Edition. See THE BRITISH EMPIRE, from which an extract appears on p. 72 of this Review.

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For the titles of a few of the Articles on Science in the Tenth Edition, see p. 213.

in this manner were also to be found without any annexed hamlet. Sometimes the rampart was double, with a deep ditch between. The simple rampart and ditch enclosed a *les* or cattleyard and the groups of houses of the owners, for every room was a separate house. The enclosed houses (*ratha*, sing. *rath*) belonged to the free men called *airig* (sing. *aire*). The sizes of the houses and of the enclosing mound and ditch marked the rank (that is, the wealth) of the aire. If his wealth consisted of chattels only, he was a *bó-aire*, or cow-aire. When he possessed ancestral land, which was no doubt one of the consequences of the Scotic conquest, he was a *flaith* or lord, and was entitled to let his lands for grazing, to have a hamlet in which lived labourers, and to keep slaves. The larger fort with two or more ditches and ramparts was a *dun*, where the chieftain or *rí* lived, and kept his hostages if he had subreguli. The houses of all classes were of wood, chiefly wattles and wicker-work enclosing clay, and cylindrical in shape, with conical roofs thatched with rushes. The oratories were of the same form and material, but the larger churches and kingly banqueting halls were made of sawn boards. Bede, speaking of a church built by Finan at Lindesfarne, says, "Nevertheless, after the manner of the Scots, he made it not of stone but of hewn oak and covered it with reeds." When St Malachy, who lived in the first half of the 12th century, thought of building a stone oratory at Bangor, it was deemed a novelty by the people, saying, "we are Scoti, not Galli." Long before this, however, stone churches had been built in other parts of Ireland, and many round towers. In some of the *cathraig* (sing. *cathir*), or stone forts, of the south-west of Ireland, the houses within the ramparts were made of stone in the form of a bee-hive, and similar "cloghans," as they are called, are found in the western islands of Scotland. . . . .

. . . .

The most striking event, however, in Ireland in the earlier part of 1900 was Queen Victoria's visit. Touched by the gallantry of the Irish regiments in South Africa, and moved to some extent, no doubt, by the presence of the duke of Connaught in Dublin as commander-in-chief, the Queen determined in April to make up for the loss of her usual spring holiday abroad by paying a visit to Ireland. The last time Her Majesty had been in Dublin was in 1861 with the Prince Consort. Since then, besides the visit of the prince and princess of Wales in 1885, Prince Albert Victor and Prince George of Wales had visited Ireland in 1887, and the duke and duchess of York in 1897; but the lack of any permanent royal residence and the long-continued absence of the Sovereign in person had aroused repeated comment. Directly the announcement of the Queen's intention was made the greatest public interest was taken in the project. Shortly before St Patrick's Day the Queen issued an order which intensified this interest, that Irish soldiers might in future wear a sprig of shamrock in their headgear on this national festival. For some years past the "wearing of the green" had been regarded by the army authorities as improper, and friction had consequently occurred, but the Queen's order put an end in a graceful manner to what had formerly been a plausible grievance. The result was that St Patrick's Day was celebrated in London and throughout the empire as it never had been before, and when the Queen went over to Dublin at the beginning of April she was received with the greatest enthusiasm. . . . .

[*The passages printed here are but an attempt to give the reader some idea of the comprehensiveness of the* 80 *pages on* IRELAND *in the Tenth Edition.*]

THE TOTTERING OF THE MOGUL EMPIRE.

From the Article (36 pages) *by* Sir W. W. HUNTER, K.C.I.E.

India.— . . . . . . Aurangzeb's long reign, from 1658 to 1707, may be regarded as representing both the culminating point of Mughal power and the beginning of its decay. Unattractive as his character was, it contained at least some elements of greatness. None of his successors on the throne was anything higher than a debauchee or a puppet. He was the first to conquer the independent sultáns of the Deccan, and to extend his authority to the extreme south. But even during his lifetime two new Hindu nationalities were being formed in the Marhattás and the Síkhs; while immediately after his death the nawabs of the Deccan, of Oudh, and of Bengal raised themselves to practical independence. Aurangzeb had indeed enlarged the empire, but he had not strengthened its foundations. During the reign of his father Sháh Jahán he had been viceroy of the Deccan, or rather of the northern portion only, which had been annexed to the Mughal empire since the reign of Akbar. His early ambition was to conquer the Mahometan kings of Bíjapur and Golconda, who, since the downfall of Vijayanagar, had been practically supreme over the south. This object was not accomplished without many tedious campaigns, in which Sivají, the founder of the Marhattá confederacy, first comes upon the scene. In name Sivají was a feudatory of the house of Bíjapur, on whose behalf he held the rock-forts of his native Gháts; but in fact he found his opportunity in playing off the Mahometan powers against one another, and in rivalling Aurangzeb himself in the art of treachery. In 1680 Sivají died, and his son and successor, Sambhají, was betrayed to Aurangzeb and put to death. The rising Marhattá power was thus for a time checked, and the Mughal armies were set free to operate in the eastern Deccan. In 1686 the city of Bíjapur was taken by Aurangzeb in person, and in the following year Golconda also fell. No independent power then remained in the south, though the numerous local chieftains, known as *pálegárs* and *naiks*, never formally submitted to the Mughal empire. During the early years of his reign Aurangzeb had fixed his capital at Delhi, while he kept his dethroned father, Sháh Jahán, in close confinement at Agra. In 1682 he set out with his army on his victorious march into the Deccan, and from that time until his death in 1707 he never again returned to Delhi. . . .

[*The Article on* INDIA, *from which is the above extract, is* 82 *pages long, and there are Articles in the Tenth Edition on* INDIAN RELIGIONS, INDIAN HILL TRIBES, BUDDHISM, HINDUISM, PARSEES, JAINS, *&c.*, *&c.*]

ENGLAND'S ALLY.

From the Articles (84 pages) *by* Sir RUTHERFORD ALCOCK, Captain F. BRINKLEY, Professor W. ANDERSON, E. F. STRANGE, *and* W. G. ASTON.

Japan.— . . . . . . The most interesting portion of Japanese history is that of the rise and fall in the Middle Ages of the warlike families which in turn seized the power and overawed the crown. Of these the Taira clan stands pre-eminent, though much of its history is mixed up with that of its rival, the Minamoto clan. The two came first into notice in the 10th century, and quickly increased in influence and strength. It would appear, indeed, that the court strove to play off the one against the other, being moved by fear that the power of either might become too great. Thus, if one of the Taira rebelled, the Minamoto were authorized by the emperor to subdue him; while, if any members of the latter clan proved unruly, the Taira were only too glad to obtain an imperial commission to proceed against them. This gave rise to incessant intrigue and frequent bloodshed, ending at last, in the middle of the 12th century, in open warfare. Tairo no Kiyomori was at that time the head of his clan; he was a man of unscrupulous character and unbounded ambition, and constantly strove to secure offices at court for him-

For the titles of a few of the articles on Geography, see p. 60 of this review.

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self, his family, and his adherents. In 1156–59 severe fighting took place at the capital between the rival clans, each side striving to obtain possession of the person of the sovereign in order to give some colour of right to its actions. In 1159 Kiyomori eventually triumphed, and the sword of the executioner ruthlessly completed the measure of his success in the field. Nearly the whole of the Minamoto chiefs were cut off,—among them being Yoshitomo, the head of the clan. A boy named Yoritomo, the third son of Yoshitomo, was, however, spared through the intercession of Kiyomori's step-mother; and Yoshitsuné, also Yoshitomo's son by a concubine, was, with his mother and two brothers, permitted to live. Yoritomo and his half-brother Yoshitsuné were destined eventually to avenge the death of their kinsmen and completely to overthrow the Taira house, but this did not take place till thirty years later. In the meantime Kiyomori's power waxed greater and greater; he was himself appointed *daijô-daijin* ("prime minister"), and he married his daughter to the emperor Takakura, whom, in 1180, he forced to abdicate in favour of the heir-apparent, who was Kiyomori's own grandson. After raising his family to the highest pinnacle of pride and power, Kiyomori died in 1181, and retribution speedily overtook the surviving members of his clan. The once almost annihilated Minamoto clan, headed by Yoritomo, mustered their forces in the Kuantô and other eastern regions for a final attempt to recover their former influence. Marching westwards under the command of Yoshitsuné, they started on one grand series of triumphs, terminating (1185) in a crowning victory in a sea-fight off Dannoura, near Shimonoséki, in the province of Chôshiu. The overthrow of the Taira family was complete: the greater number perished in the battle, and many were either drowned or delivered over to the executioner. The emperor himself (Antoku, 82nd of his line), then only in the seventh year of his age, was drowned, with other members of the imperial house. The Taira supremacy here came to an end, having existed during the reigns of nine emperors.

. . . .

The Constitution of 1890.

In 1890 the Constitution was promulgated. Imposing ceremonies marked the event. All the nation's notables were summoned to the palace to witness the delivery of the important document by the Sovereign to the prime minister; salvos of artillery were fired; the cities were illuminated, and the people kept holiday. Marquis Ito directed the framing of the Constitution. He had visited the Occident for the purpose of investigating the development of parliamentary institutions and studying their practical working. His name is connected with nearly every great work of constructive statesmanship in the history of new Japan, and perhaps the crown of his legislative career was the drafting of the Constitution, to which the Japanese people point proudly as the only charter of the kind voluntarily given by a sovereign to his subjects. In other countries such concessions were always the outcome of long struggles between ruler and ruled. In Japan the Emperor freely divested himself of a portion of his prerogatives and transferred them to the people. That view of the case, as may be seen from the story told above, is not untinged with romance; but in a general sense it is true. The framers of the Constitution did not err on the side of liberality. They fixed the minimum age for electors and candidates at twenty-five, and the property qualification at a payment of direct taxes to the amount of 15 *yen* (30 shillings) annually. The result was that only 460,000 persons were enfranchised out of a nation of 42 millions. A bicameral system was adopted for the Diet; the Upper House being in part elective, in part hereditary, and in part nominated by the Sovereign; the Lower consisting of 300 elected members. Freedom of conscience, of speech, and of public meeting, inviolability of domicile and correspondence, security from arrest or punishment, except by due process of law, permanence of judicial appointments, and all the other essential elements of civil liberty were guaranteed. In the Diet full legislative authority was vested: without its consent no tax could be imposed, increased, or remitted; nor could any public money be paid out except the salaries of officials, which the Sovereign reserved the right to fix at will. In the Emperor were vested the prerogatives of declaring war and making peace, of concluding treaties, of appointing and dismissing officials, of approving and promulgating laws, of issuing urgency ordinances to take the temporary place of laws, and of conferring titles of nobility.

Working of the system.

No incident in Japan's modern career seemed more hazardous than this sudden plunge into parliamentary institutions. There had been, as shown above, some preparation. Provincial assemblies had partially familiarized the people with the methods of deliberative bodies. But provincial assemblies were at best petty arenas—places where the making or mending of roads, and the policing and scavenging of villages, came up for discussion, and where political parties exercised no legislative function, nor found any opportunity to attack the Government or to debate problems of national interest. Thus the convening of a Diet, and the sudden transfer of financial and legislative authority from the throne and its entourage of tried statesmen to the hands of men whose qualifications for public life rested on the verdict of electors, themselves apparently devoid of all light to guide their choice—this sweeping innovation seemed likely to tax severely, if not to overtax completely, the progressive capacities of the nation. What enhanced the interest of the situation was that the oligarchs who held the administrative power had taken no pains to win a following in the political field. . . . .

[JAPANESE ART, THE CHINA-JAPAN WAR, CHINA, KOREA, THE PROBLEMS OF THE FAR EAST, *and* THE COMMAND OF THE SEA *are some only of the Far-Eastern subjects dealt with in the Tenth Edition of the Encyclopædia Britannica.*]

You have been interested in many, probably most, of the above extracts. In reading them, short as they are, you have gained a new idea of the development of the World's History. But if the greater part of this pamphlet were devoted to extracts from the historical articles, it would not afford space enough to indicate the range of criticism and research which is at your disposal in the Tenth Edition.

And if this is true of History and the articles devoted to History in the Tenth Edition, it is equally true of every other subject to which human intelligence has been devoted. In the following pages will be found a collection of extracts from the biographical articles, which will be a guide to the reader whose interests in the lives of great men will naturally induce him to ask with what completeness the *Encyclopædia Britannica* treats his favourite subject.

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HISTORY IN THE TENTH EDITION

A FEW OF THE HISTORICAL FIGURES WHOSE LIVES ARE TOLD IN THE VOLUMES

Men Who Led Reform.

JOHN WICLIFFE.
SIR JOHN OLDCASTLE.
MARTIN LUTHER.
HULDREICH ZWINGLI.
JOHN HUSS.
DESIDERIUS ERASMUS.
JOHN CALVIN.
GIROLAMO SAVONAROLA.
IGNATIUS LOYOLA.
JOHN WESLEY.
JOHN OF LEYDEN.
STEPHEN MELANCTHON.
JOHN KNOX.
FRANCIS XAVIER.
THOMAS CRANMER.
WILLIAM LAUD.
JEAN JACQUES ROUSSEAU
JOHN HOWARD.
WILLIAM WILBERFORCE.
ABRAHAM LINCOLN.
RICHARD COBDEN.
JOHN BRIGHT.

Men Who were Great Soldiers.

SCIPIO AFRICANUS.
JULIUS CÆSAR.
HANNIBAL.
CHARLEMAGNE.
GUSTAVUS ADOLPHUS.
THE BLACK PRINCE.
PRINCE RUPERT.
OLIVER CROMWELL.
JOHN DUKE OF MARLBORO'
PRINCE EUGENE.
MARSHAL SAXE.
JOHN SOBIESKI.
VICOMTE DE TURENNE.
WALLENSTEIN.
FREDERICK THE GREAT.
PRINCE DE CONDE.
WELLINGTON.

Men Who Explored the World.

CHRISTOPHER COLUMBUS.
FRANCISCO PIZARRO.
AMERIGO VESPUCCI.
SEBASTIAN CABOT.
HERNAN CORTES.
MARTIN FROBISHER.
SIR JOHN HAWKINS.
SIR FRANCIS DRAKE.
SIR WALTER RALEIGH.
LORD ANSON.
FERDINAND MAGELLAN.
CAPTAIN COOK.

Men Who Rose from Nothing.

THOMAS À BECKET.
CARDINAL WOLSEY.
LORD CLIVE.
CLOUDESLEY SHOVEL.
CARDINAL ALBERONI.
CARDINAL DUBOIS.
GREGORY POTEMKIN.

To think of the names of all the Wars and Battles mentioned in the historical articles of the *Encyclopædia Britannica* would demand the continued efforts of bodies of men for weeks. Let us take only a few of the more important ones that will recur to us if we devote a moment of reflection to stirring that curiosity within us which is always waiting to rise at the touch of the spur. There are the battles of Hastings, Bannockburn, and Flodden; of Cressy, Poictiers, and Agincourt (which Shakespeare has fixed eternally in the memories of Englishmen); there are the battles of the Civil War—Naseby, Marston Moor, Edgehill, and the famous Worcester, in which Charles II. narrowly escaped from the troopers of the great Protector; there is the long catalogue of Marlborough's victories—Blenheim, Malplaquet, Oudenarde, Ramillies; there is the fight against the Armada, which constitutes one of the finest passages in the long reign of that bright occidental star, Elizabeth; and there are the victories of Nelson—Copenhagen, Nile, Trafalgar; it were idle to continue the list. Of wars there are the Trojan, Punic, Peloponnesian; the Wars of the Roses, of Guelphs, and Ghibellines; there are the Thirty Years' War, the Seven Years' War, and the Seven Days' War; there are the Wars of Liberation, of Independence, of Secession; in more recent times there are the Crimean War, Franco-Prussian War, the Russo-Turkish War, the Chino-Japanese War, the Sikh War, the Burmese War, and the Spanish-American War—to say nothing of the series of wars culminating in the Great Boer War.

The number of people alive to-day is as nothing compared with the list of the dead since the beginning of the world. Edmund Burke once made a rhetorical attempt to estimate the number of people who had perished in the battlefield; but the task is an idle one. Almost equally idle would be any serious attempt to summarize the mass of historical information within the 35 quarto volumes of the *Encyclopædia Britannica.*

History and Mr Kipling's SIX SERVING MEN (see pp. 133 and 134 of this pamphlet)

WHAT does the ENGLISH REFORMATION signify?
See Dr RAWSON GARDINER'S ENGLAND.

HOW might the IRISH REBELLION OF 1798 have been averted?
See LORD MACAULAY'S PITT.

WHO were the WALDENSES?
See the article under that heading by Dr MANDELL CREIGHTON, late Bishop of London.

WHEN may the RENAISSANCE be said to have begun?
See the article by JOHN ADDINGTON SYMONDS.

WHERE, besides England and France, did the Normans leave marks on the World's History?
See the article NORMANS *by the late Prof. FREEMAN.*

WHY did Napoleon break the Peace of Tilsit?
See the late Sir J. R. SEELEY'S article on NAPOLEON.

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1792. communication with the enemy. The feeling against the ministers was so strong that after the trial of one of them, known to be the queen's agent, they all resigned, and a Girondist cabinet was appointed by the king. Roland, a man of intelligence, spirit, and uprightness, married to the noblest lady of these troubled times,—a lady who was the inspiring genius of the Gironde,—was made minister of the interior. The other name of note was that of Dumouriez, who had the portfolio of foreign affairs. This ministry at once took up a resolute position against the allied sovereigns; and Francis II., the new head of the house of Austria, unlike Leopold, who had never wished for war, at once replied with defiance, ordering France to replace king, clergy, and nobles in their ancient dignities and privileges. On the 20th April 1792 the Girondist ministry declared war against Francis, and the long wars of the republic and the empire began.

The Girondist ministry

War declared against Austria.

The French army was in a state of great confusion; most of its officers had joined the emigrants, eager to show the Germans "the way to Paris"; those who remained were suspected by the people; there was little money in the treasury, little experience in the camp. Dumouriez hoped to make a good beginning by invading Belgium, restless under its Austrian masters, and only lately in revolt. All, however, went amiss. One column was checked near Tournay, lost its guns, killed Dillon its general, and fled with cries of "treason"; a second column was defeated near Mons; Lafayette and the other generals hereon halted and stood on the defensive. All France was uneasy. Had her ancient courage departed? was she powerless without her noble officers? or was she the victim of treachery? The Jacobins grew more vehement; the terrible voice of Marat was now heard calling for heads; suspicion became greater than ever against the king, above all against the Austrian queen, and the guards around them, who were thought to be inclined to betray the people. The Assembly declared itself as sitting in permanence. It levelled measures against the refractory priests; it decreed that the king's guard should be dismissed, and that a camp of federal soldiers should be formed at Paris. The king refused to dismiss his guards; and on a strong remonstrance from Roland, he at once dismissed the three chief Girondist ministers. Dumouriez finding the king obstinate, also resigned office. Louis named a ministry of obscure members of the Feuillant party,—men who believed in the constitution of 1790, and in the royal authority. It was at this time that he sent Mallet du Pan on a secret mission to Vienna, to pray the Germans to rescue him from the tyranny of those "who now ruled with a rod of iron."

Campaign in Belgium.

The Girondists, thus ejected from power, made common cause with the Jacobins, and watched with keen eyes the course of Lafayette, the centre of the constitutional party; the ministry and all those who in heart loved the older system or dreaded the progress of the Revolution, looked to Lafayette and his army as their only hope. He was no statesman, loyal and upright as he was, and committed the great blunder of defying the Jacobins. At once his waning popularity was lost; his party was seen to be that of reaction; the people could see no difference between the constitutionalist Feuillants and the aristocrat emigrants, and the doom of the party was sealed. On the 20th of June 1792 the Jacobins replied to Lafayette's manifesto by raising the Parisian populace against the Assembly. That body, overawed and powerless, could do nothing against so fierce and determined an invasion. They next forced their way into the palace, and there Louis XVI. met them with admirable dignity. The populace shouted "down with the veto," "recall the ministers," and so forth. The king wore the Paris red cap, and the crowd was appeased at once. It was an excited, not a bloodthirsty, mob that day. Louis assured them that "he would do whatever the constitution ordained that he should do,"—words which, though they meant little, yet, when joined with the red cap and the king's manly bearing, satisfied the people, who departed quietly. Public opinion seemed at once to go with the monarch and the ministers against this outrage; the Girondists, who had been parties to it, lost ground; Lafayette even ventured to come up to Paris from the army to demand the punishment of the insurgent chiefs. His attempt, however, was a failure. The Assembly threatened to arrest him for leaving his troops without orders; the courtiers of the Tuileries looked coldly on him; the king gave him no thanks; as for the queen, she liked him no better than of old. He had to return quickly to the army. The truth was that at this time the court policy had gone entirely over to the emigrants and their foreign friends. There were 80,000 men at Coblentz commanded by the duke of Brunswick; the royalists cared nothing for such constitutionalists as Lafayette; "in a month I shall be free," was the queen's remark.

Lafayette's position.

Insurrection of the 20th of June.

1792.

The court goes over to the emigrants.

Prussia had now also declared against France, and was on the march; this movement restored all power and popularity to the Jacobins. The Assembly took measures in self-defence against the court and the foreigners; men began to call for the deposition of the king; the country was proclaimed in danger, and 50,000 volunteers were decreed; men flocked to enrol themselves from every quarter; the excitement grew daily; the fiercest threats and suggestions made themselves heard. The Jacobins organized, almost openly, a new insurrection, which should force the hand of the Assembly, and "save the Revolution." The vanguard of the attack on the constitution was entrusted to the battalion of men of Marseilles, who have attached their name to the ever-famous song, which has been sung by Frenchmen on so many a hard-won battlefield, in politics or in campaign, the *Marseillaise*. The extravagant proclamation with which Brunswick heralded the opening of his campaign did but add to the fury of the people; and on the 10th of August the great insurrection, led by the popular chief Danton, swept over the Assembly and the monarchy, overpowering everything as it passed along. The guards at the Tuileries were of uncertain fidelity to the king; the commissioners of the sections of Paris seized on the Hôtel de Ville, and at once set up an "insurrectionary commune"; they summoned before them the commandant of the national guard, Mandat, who was massacred as he left the hall. The guards, thus left headless, refused to fire on the people; the insurrection swept over all; the king with difficulty, surrounded by his family, took refuge under protection of the trembling Assembly. The Swiss guards of the palace were massacred, the Tuileries taken and sacked; the new municipality, flushed with victory, compelled the Assembly to confirm its powers; to order the election of a new National Convention; to declare the king suspended provisionally, and placed at the Luxembourg under civic guard; to dismiss the ministers; to make into law the decrees passed but vetoed by the king. The Assembly was crushed, the royal family prisoners in the Temple; the Paris people, under inspiration of Robespierre and Danton, were omnipotent. Forthwith began the terrible scenes of the prisons, the mockery of trial, the massacres of the "killers at six francs a day." It was clear that the new commune of Paris was now the sovereign power in France; it established a committee of surveillance, and swept away all the older administration of Paris. Danton, burly representative of popular passions, and of popular kindness also, was the leading spirit of the time. He was no statesman, and had little chance of permanent power, when pitted against the virtuous, the incorruptible Robespierre, who had kept sedulously clear of the insurrec-

Insurrection of the 10th of August.

The Marseillaise.

The Paris commune.

Danton.

The above is a facsimile of one of the 30,000 pages which make up the Tenth Edition of the Encyclopædia Britannica. Another Specimen Page from the work may be seen on p. 103 of this review.

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BIOGRAPHY

Great men have been among us; hands that penned
And tongues that uttered wisdom.—WORDSWORTH.
Hero-worship, done differently in every different epoch of the world, is the soul of all social business among men.—CARLYLE.

NO form of reading is more fascinating than the biographical. In spite of the spread of theories insisting on the unimportance of the individual, we are all attracted by the personal in daily life. It is a fact full of significance that few people of to-day have read the sonnets of Shakespeare, while many have wasted time on controversial literature as to the identity of "Mr W. H.," the undiscovered person to whom the sonnets were dedicated. Pure æsthetic enjoyment has been replaced by a desire to find human values in art, in literature, in science, in the drama. We are not content to know that Lord Rayleigh discovered a new constituent of air called Argon, we want to view the discovery in relation to the discoverer; instinctively we seek to establish in our minds some connexion between the man in his everyday aspect and the achievement with which his name has become associated; and the more unexpected are the contradictions in men's lives, the more we are attracted by the problem of trying to reconcile them.

How is it that a great commander like Lord Roberts, whose profession has been called one of "scientific destruction," should hesitate to harm an obnoxious fly that buzzes between him and the pages of Jomini's "Art of War." In our conception of Sir Charles Russell as a figure in the world of humanity, how are we to reconcile his eloquence as leading counsel for Great Britain in the Behring Sea Arbitration with his unflagging interest in a subject of so widely different a nature as horse racing?

For the solution of problems like these the Encyclopædia Britannica is an unrivalled book, a most comprehensible and trustworthy library of detailed reference in every phase of life's activity as illustrated in the biographies of poets, musicians, scholars, churchmen, statesmen, soldiers, merchants, lawyers, and every other rank which has helped to build up the history of the past and the present. Not only to satisfy some point of controversy that arises with regard to these men is the Encyclopædia Britannica of the greatest utility, but it also offers in the variety of its biographies the most pleasant and profitable literature for anyone who casually picks up a volume wherewith to occupy a stray half-hour.

THE COMMENCEMENT OF A NEW ERA.

A short extract from the biographical Article on

King Edward VII.— . . . . . On the death of Queen Victoria on 22nd January 1901, the question what title the new king would assume was speedily set at rest by the popular announcement that he would be called Edward the Seventh. The new reign began auspiciously by the holding of a Privy Council at St. James's Palace, at which the King announced his intention to follow in his predecessor's footsteps and to govern as a constitutional sovereign, and received the oaths of allegiance. On 14th February the King and Queen opened Parliament in state. Shortly afterwards it was announced that the visit of the duke and duchess of York to Australia, in order to inaugurate the new Commonwealth, which had been sanctioned by Queen Victoria, would be proceeded with; and on 16th March they set out on board the *Ophir* with a brilliant suite. The tour lasted till 1st November, the duke and duchess having visited Australia, New Zealand, the Cape, and Canada; and on their return the King, on 9th November, created the duke prince of Wales and earl of Chester. In the meanwhile Parliament had settled the new Civil List (*q.v.*) at £470,000 a year. On 22nd May the King had a narrow escape in Southampton Water, on board Sir T. Lipton's yacht *Shamrock II.* (which was to compete for the America Cup). The yacht had her masts, spars, and entire spread of canvas carried away in a squall; but the King suffered no injury. The question of enlarging the Royal title to include specific mention of the colonial empire had been discussed during the year, and on 30th July Parliament passed a Bill to enable the King to style himself "Edward VII., by the grace of God of the United Kingdom of Great Britain and Ireland, and of all the British Dominions beyond the Seas, King, Defender of the Faith, Emperor of India." . . . .

[*Biographies of all modern Sovereigns will be found in the Tenth Edition. See, for example, the Articles* VICTORIA, WILHELMINA, WILLIAM II., German Emperor, *&c.*, *&c.*]

A PRIME MINISTER "BEFORE THE MAST."

From the biographical Article on

Ito, Marquis.— . . . . . But Ito felt that his knowledge of foreigners, if it was to be thorough, should be sought for in Europe, and with the connivance of Choshiu he, in company with Inouye and three other young men of the same rank as himself, determined to risk their lives by committing the then capital offence of visiting a foreign country. With great secrecy they made their way to Nagasaki, where they concluded an arrangement with the agent of Messrs. Jardine, Matheson & Co. for passages on board a vessel which was about to sail for Shanghai (1863). At that port the adventurers separated, three of their number taking ship as passengers to London, while Ito and Inouye preferred to work their passages before the mast in the *Pegasus*, bound for the same destination. For a year these two friends remained in London studying English methods, but then events occurred in Japan which recalled them to their country. The treaties lately concluded by the Shôgun with the foreign Powers conceded the right to navigate the strait of Shimonoseki, leading to the Inland Sea. On the northern shores of

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this strait stretched the feudal state ruled over by Prince Choshiu, who refused to recognize the clause opening the strait, and erected batteries on the shore, from which he opened fire on all ships which attempted to force the passage. The Shôgun having declared himself unable in the circumstances to give effect to the provision, the treaty Powers determined to take the matter into their own hands. Ito, who was better aware than his chief of the disproportion between the fighting powers of Europe and Japan, memorialized the Cabinets, begging that hostilities should be suspended until he should have had time to use his influence with Choshiu in the interests of peace. With this object Ito hurried back to Japan. But his efforts were futile. Choshiu refused to give way, and suffered the consequences of his obstinacy in the destruction of his batteries and in the infliction of a heavy fine. The part played by Ito in these negotiations aroused the animosity of the more reactionary of his fellow-clansmen, who made repeated attempts to assassinate him. On one notable occasion he was pursued by his enemies into a tea-house, where he was concealed by a young lady beneath the floor of her room. Thus began a romantic acquaintance, which ended in the lady becoming the wife of the fugitive. . . . .

[*The Encyclopædia Britannica also contains Biographies of* LI HUNG CHANG, Sir SALAR JUNG, KHAIREDDIN, NUBAR PASHA, SHEREFF PASHA, *and many other Oriental diplomatists.*]

THE SWEDISH NIGHTINGALE.

From the Article on

Lind, Jenny.— . . . . . . Her *début* had been so much discussed that the *furore* she created was a foregone conclusion. Still, it exceeded everything of the kind that had taken place in London or anywhere else, in the genuine enthusiasm the singer made; the sufferings and struggles of her well-dressed admirers, who had to stand for hours to get into the pit, have become historical. She sang in several of her favourite characters, and in that of Susanna in *Figaro*, besides creating the part of Amalia in Verdi's unsuccessful opera, *I Masnadieri*, written for England and performed 22nd July. In the autumn she appeared in operas in Manchester and Liverpool, and in concerts at Brighton, Birmingham, Hull, Edinburgh, Glasgow, Perth, Norwich, Bristol, Bath, and Exeter. At Norwich began her acquaintance with Bishop Stanley, which was said to have caused her final determination to give up the stage as a career. After four more appearances at Berlin, and a short visit to Stockholm, she reappeared in London in the season of 1848, when she sang in *L'Elisire d'Amore* and *I Puritani*, in addition to her older parts. In the same year she organized a memorable performance of *Elijah*, with the receipts of which the Mendelssohn Scholarship was founded, and sang at a great number of charity and benefit concerts. At the beginning of the season of 1849 she intended to give up operatic singing, but a compromise was effected by which she was to sing the music of six operas, performed without action, at Her Majesty's Theatre; but the first, a concert performance of *Il Flauto Magico*, was so coldly received that she felt bound, for the sake of the manager and the public, to give five more regular representations, and her last stage performance was on the 10th May 1849, in *Robert le Diable*. Her decision was not even revoked when the king of Sweden urged her to reappear in opera at her old home. She paid visits to Germany and Sweden again before her departure for America in 1850. Just before sailing she appeared at Liverpool, for the first time in England, in an oratorio of Handel, singing the soprano music in *The Messiah* with superb art. She remained in America for nearly two years, being for a great part of the time engaged by Barnum, the famous speculator. . . . .

[*Of biographies of women famous in the musical and dramatic world the Encyclopædia Britannica is full.* Madame SCHUMANN, Mrs KEELEY, FANNY KEMBLE, Madame MODJESKA, ELLEN TERRY, *are but a few of those whose lives are the subjects of Articles.*]

THE FIRST WOMAN-DOCTOR.

From the biographical Article on

Anderson, Elizabeth Garrett (1836-——), English medical practitioner, daughter of Newson Garrett, of Aldeburgh, Suffolk, was born in 1836, and educated at home and at a private school. In 1860 she resolved to study medicine, an unheard-of thing for a woman in those days, and one which was regarded by old-fashioned people as almost indecent. Miss Garrett managed to obtain some more or less irregular instruction at the Middlesex Hospital, London, but was refused admission as a full student both there and at many other schools to which she applied. Finally, she studied anatomy privately at the London Hospital, and with some of the professors at St Andrews University, and at the Edinburgh Extra-Mural School. She had no less difficulty in gaining a qualifying diploma to practise medicine. London University, the Royal Colleges of Physicians and Surgeons, and many other examining bodies, refused to admit her to their examinations; but in the end the Society of Apothecaries, London, allowed her to enter for the License of Apothecaries' Hall, which she obtained in 1865. In 1866 she was appointed general medical attendant to St Mary's Dispensary, a London institution started to enable poor women to obtain medical help from qualified practitioners of their own sex. The dispensary soon developed into the New Hospital for Women, and there she worked for over twenty years. In 1870 she obtained the Paris degree of M.D. The same year she was elected to the first London School Board, at the head of the poll for Marylebone, and was also made one of the visiting physicians of the East London Hospital for Children. . . . In 1871 she married Mr J. G. S. Anderson, a shipowner, but did not give up practice. She worked steadily at the development of the New Hospital, and (from 1874) at the creation of a complete School of Medicine in London for women. Both institutions have since been handsomely and suitably housed and equipped, the New Hospital (in the Euston Road) being worked entirely by medical women, and the School (in Hunter Street, W.C.) having over 200 students, most of them preparing for the medical degree of London University, which was opened to women in 1877. In 1897 Mrs Garrett Anderson was elected president of the East Anglian branch of the British Medical Association. The movement for the admission of women to the medical profession, of which she was the indefatigable pioneer in England, has extended not only to every part of the United Kingdom and the British colonies, but to every European country except Spain and Turkey. . . . .

[Sir W. GULL, Dr CHARCOT, Lord LISTER, Sir W. M'CORMAC, PASTEUR, VIRCHOW, Sir HY. THOMPSON, Sir JAMES PAGET, *are only a few of the great men in the medical world whose lives are related in the Tenth Edition of the Encyclopædia Britannica.*]

For the titles of some of the Articles on Medicine, see p. 194.

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Lhasa, the Mysterious

Few, indeed, to-day are the portions of the earth which can be said to be mysterious. Explorers by land and sea have discovered and described for us nearly all the globe; but Lhasa, the capital of Tibet, within only two hundred miles of the frontiers of Sikkim, remains almost as full of mystery as in those days when Clive, the cotton clerk, added up his invoices in the little office at Calcutta. All that can be told of this fascinating region, and that extraordinary being the Lhama who reigns over the country, is to be read in the interesting articles devoted to the subject in the Tenth Edition.

THE INVENTOR OF GERMANY.

From the Article (5 pages) by J. W. HEADLAM.

Bismarck.— . . . . . . The relations with Napoleon form one of the most interesting but obscurest episodes in Bismarck's career. We have seen that he did not share the common prejudice against co-operation with France. He found Napoleon willing to aid Prussia as he had aided Piedmont, and was ready to accept his assistance. There was this difference, that he asked only for neutrality, not armed assistance, and it is improbable that he ever intended to alienate any German territory; he showed himself, however, on more than one occasion ready to discuss plans for extending French territory on the side of Belgium and Switzerland. Napoleon, who had not anticipated the rapid success of Prussia, after the battle of Königgrätz at the request of Austria came forward as mediator, and there were a few days during which it was probable that Prussia would have to meet a French attempt to dictate terms of peace. Bismarck, in this crisis, by deferring to the emperor in appearance avoided the danger, but he knew that he had been deceived, and the cordial understanding was never renewed. Immediately after an armistice had been arranged, Benedetti, at the orders of the French Government, demanded as recompense a large tract of German territory on the left bank of the Rhine. This Bismarck peremptorily refused, declaring that he would rather have war. Benedetti then made another proposal, submitting a draft treaty by which France was to support Prussia in adding the South German states to the new confederation, and Germany was to support France in the annexation of Luxemburg and Belgium. Bismarck discussed, but did not conclude the treaty; he kept, however, a copy of the draft in Benedetti's handwriting, and published it in the *Times* in the summer of 1870 so as to injure the credit of Napoleon in England. . . . . .

Bismarck and Napoleon.

[*Among European statesmen to whose lives Articles are devoted in the Encyclopædia Britannica are* Count von BULOW, Signor CRISPI, Marquis de RUDINI, STAMBULOFF, Count MURAVIEFF, LEON SAY, JULES FERRY, *and* GAMBETTA.]

THE SLAVE'S FRIEND.

From the Article (5 pages) by Col. J. G. NICOLAY, author of "Life of Abraham Lincoln."

Lincoln, Abraham.— . . . . . . With public opinion thus ripened by alternate defeat and victory, President Lincoln on September 22, 1862, issued his preliminary proclamation of emancipation, giving notice that on the 1st of January 1863, "all persons held as slaves within any State or designated part of a State, the people whereof shall then be in rebellion against the United States, shall be then, thenceforward, and for ever free." In his message to Congress on the 1st of December following he again urged his plan of gradual, compensated emancipation "as a means, not in exclusion of, but additional to, all others for restoring and preserving the national authority throughout the Union." On the 1st day of January 1863 the final proclamation of emancipation was duly issued, designating the States of Arkansas, Texas, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and certain portions of Louisiana and Virginia, as "this day in rebellion against the United States," and proclaiming that, in virtue of his authority as commander-in-chief, and as a necessary war measure for suppressing rebellion, "I do order and declare that all persons held as slaves within said designated States and parts of States are and henceforward shall be free," and pledging the executive and military power of the Government to maintain such freedom. The legal validity of these proclamations was never pronounced upon by the national courts; but their decrees, gradually enforced by the march of armies, were soon recognized by public opinion to be practically irreversible. Such dissatisfaction as they caused in the border slave States died out in the stress of war. . . . .

[*To the history of* AMERICA *are devoted nearly* 100 *pages in the Tenth Edition.*]

THE AUTHOR OF "LEAD, KINDLY LIGHT."

From the biographical Article on

Newman, Cardinal.— . . . . . . He assisted Whately in his popular work on Logic, and from him he gained his first definite idea of the Christian Church. He broke with him in 1827 on the occasion of the re-election of Peel for the University, Newman opposing this on personal grounds. In 1826 he became tutor of Oriel, and the same year R. H. Froude, described by Newman as "one of the acutest, cleverest, and deepest men" he ever met, was elected fellow. The two formed a high ideal of the tutorial office as clerical and pastoral rather than secular. In 1827 he was a preacher at Whitehall. . . . . . . In June 1833 he left Palermo for Marseilles in an orange boat, which was becalmed in the Strait of Bonifacio, and here he wrote the verses, "Lead, kindly Light," which later became popular as a hymn. He was at home again in Oxford, 9th July, and on the 14th Keble preached at St Mary's an assize sermon on "National Apostasy," which Newman afterwards regarded as the inauguration of the Oxford Movement. In the words of Dean Church, it was "Keble who inspired, Froude who gave the impetus, and Newman who took up the work"; but the first organization of it was due to Mr H. J. Rose, editor of the *British Magazine*, who has been styled "the Cambridge originator of the Oxford Movement." It was in his rectory house at Hadleigh, Suffolk, that a meeting of High Church clergymen was held, 25th to 29th July (Newman was not present), at which it was resolved to fight for "the apostolical succession and the integrity of the Prayer-Book."

For Specimen Pages and explanation of the Index, see pp. 164 and 165.

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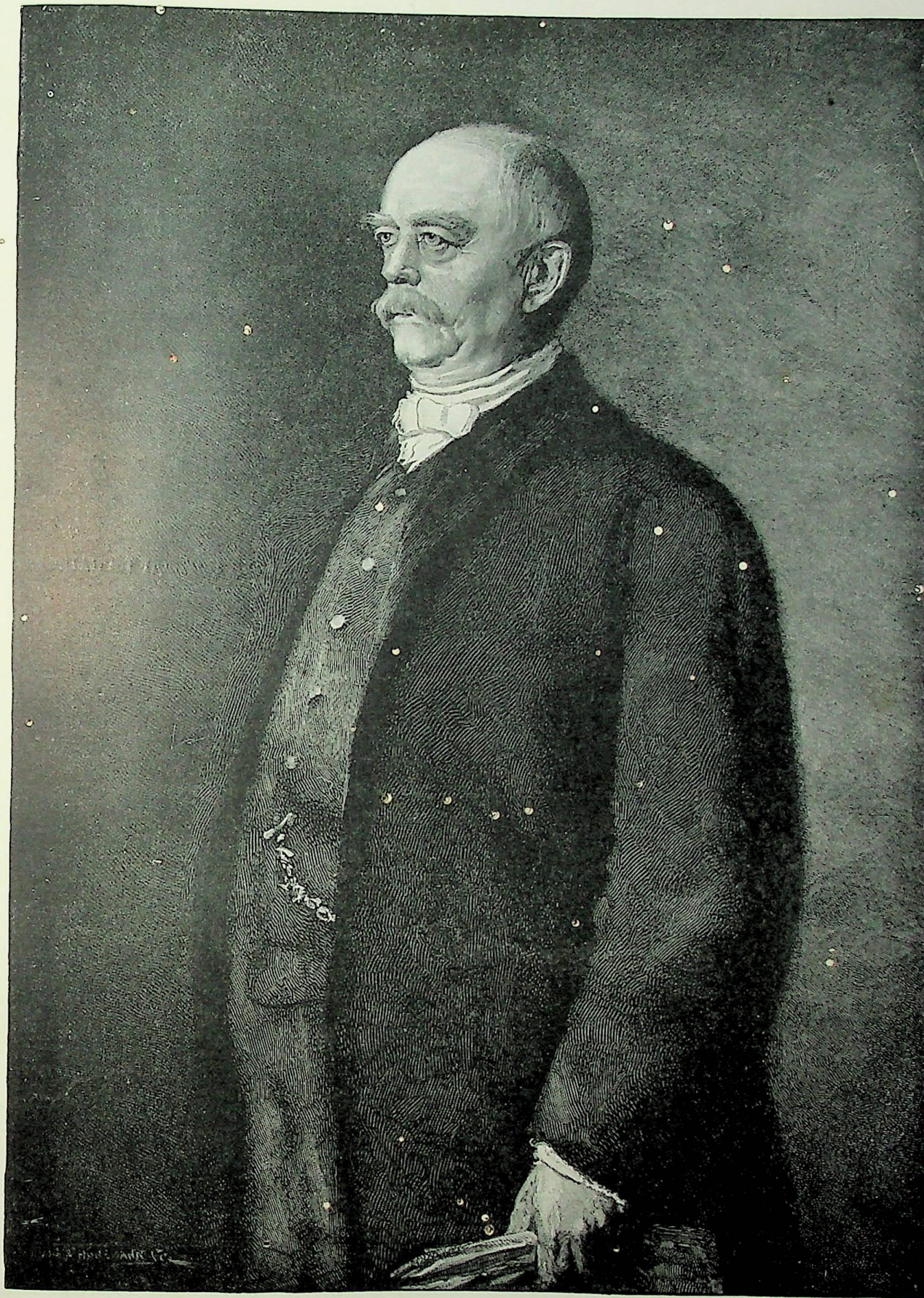
This is one of the numerous Portraits illustrating the lives of great men narrated in the Tenth Edition.

OTTO VON BISMARCK.

(From the Painting by Franz von Lenbach.)

The Article on LENBACH in the Tenth Edition is one among many devoted to great painters of the past and present.

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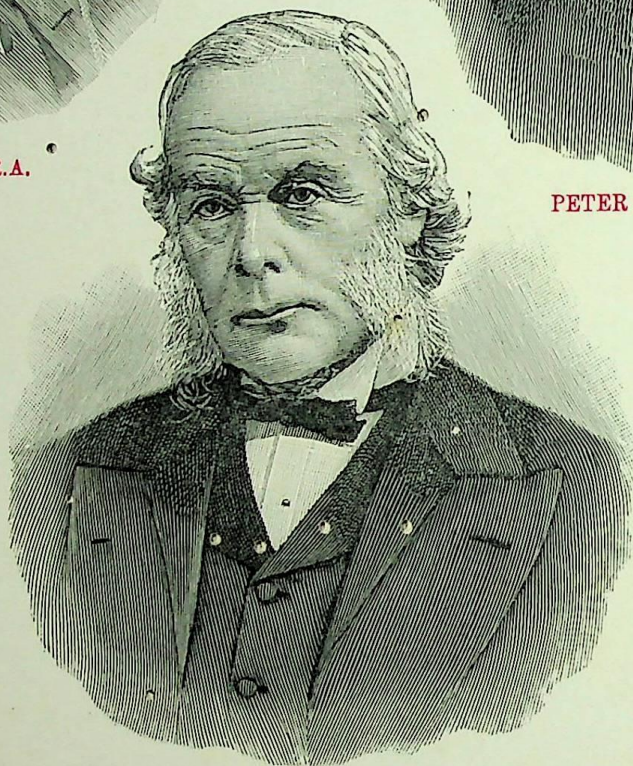
A PAGE OF PORTRAITS FROM THE TENTH EDITION.

GEORGE FREDERICK WATTS, R.A.

PETER ILIITSCH TSCHAÏKOVSKY.

LORD LISTER.

EDWARD AUGUSTUS FREEMAN.

CARDINAL NEWMAN.

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A few weeks later Newman started, apparently on his own initiative, the *Tracts for the Times*, from which the movement was subsequently named "Tractarian." At this date Newman became editor of the *British Critic*, and he also gave courses of lectures in a side-chapel of St Mary's in defence of the *via media* of the Anglican Church as between Romanism and popular Protestantism. His influence in Oxford was supreme about the year 1839, when, however, his study of the monophysite heresy first raised in his mind a doubt as to whether the Anglican position was really tenable on those principles of ecclesiastical authority which he had accepted; and this doubt returned when he read, in Wiseman's article in the *Dublin Review* on "The Anglican Claim," the words of St Augustine against the Donatists, "*securus judicat orbis terrarum*," words which suggested a simpler authoritative rule than that of the teaching of antiquity . . . .

He was a man of magnetic personality, with an intense belief in the significance of his own career; and his character may be described as feminine, both in its strength and in its weakness. As a poet he had inspiration and genuine power. Some of his short and earlier poems, in spite of a characteristic element of fierceness and intolerance in one or two cases, are described by Mr R. H. Hutton as "unequalled for grandeur of outline, purity of taste, and radiance of total effect"; while his latest and longest, "The Dream of Gerontius," is generally recognized as the happiest effort to represent the unseen world that has been made since the time of Dante. His prose style, especially in his Catholic days, is fresh and vigorous, and is attractive to many who do not sympathize with his conclusions, from the apparent candour with which difficulties are admitted and grappled with, while in his private correspondence there is a charm that places it at the head of that branch of English literature. . . . . . . But he had many of the gifts that go to make a first-rate journalist, for, "with all his love for and his profound study of antiquity, there was something about him that was conspicuously modern." Nevertheless, with the scientific and critical literature of the years 1850–90 he was barely acquainted, and he knew no German. . . . . It is certain that he explained to his own satisfaction and accepted every item of the Roman Catholic creed, even going beyond it, as in holding the Pope to be infallible in canonization; and while expressing his preference for English as compared with Italian devotional forms, he was himself one of the first to introduce such into England, together with the ritual peculiarities of the local Roman Church. The motto that he adopted for use with the arms emblazoned for him as cardinal—*Cor ad cor loquitur*, and that which he directed to be engraved on his memorial tablet at Edgbaston—*Ex umbris et imaginibus in veritatem*—together seem to disclose as much as can be disclosed of the secret of a life which, both to contemporaries and to later students, has been one of almost fascinating interest, at once devout and inquiring, affectionate and yet sternly self-restrained. . . . .

[*The lives of* PUSEY, KEBLE, Cardinals WISEMAN, ANTONELLI, GIBBONS, *and* RAMPOLLA, *are all narrated in the Tenth Edition.*]

THE FOUNDER OF SOCIAL DEMOCRACY IN GERMANY.

From the biographical Article on

Lassalle.— . . . . . . Now began the short-lived activity which was to give him an historical significance. It was early in 1862, when the struggle of Bismarck with the Prussian liberals was already begun. Lassalle, who had always been a democrat of the most advanced type, saw that an opportunity had come for asserting a third great cause—that of the working men—which would outflank the liberalism of the middle classes, and might even command the sympathy of the Government. His political programme was, however, entirely subordinate to the social, that of bettering the condition of the working-classes, for which he believed the schemes of Schulze-Delitzsch were utterly inadequate. Lassalle flung himself into the career of agitator with his accustomed vigour. His worst difficulties were with the working men themselves, among whom he met the most discouraging apathy. For a war to the knife with the liberal press he was quite prepared, and he accepted it manfully. His mission as organizer and emancipator of the working class lasted only two years and a half. In that period he issued about twenty separate publications, most of them speeches and pamphlets, but one of them, that against Schulze-Delitzsch, a considerable treatise, and all full of keen and vigorous thought. He founded the "Allgemeiner Deutscher Arbeiterverein," was its president and almost single-handed champion, conducted its affairs, and carried on a vast correspondence, not to mention about a dozen state prosecutions in which he was during that period involved. Berlin, Leipsic, Frankfort, and the industrial centres on the Rhine, were the chief scenes of his activity. His greatest success was on the Rhine, where in the summers of 1863 and 1864 his travels as missionary of the new gospel resembled a triumphal procession. The agitation was growing rapidly, but he had achieved little substantial success when a most unworthy death closed his career.

While posing as the Messiah of the poor, Lassalle was a man of decidedly fashionable and luxurious habits. His suppers were well known as among the most exquisite in Berlin. It was the most piquant feature of his life that he, one of the gilded youth, a connoisseur in wines, and a learned man to boot, had become agitator and the champion of the working man. In one of the literary and fashionable circles of Berlin he had met a young lady, a Fräulein von Dönniges, for whom he at once felt a passion, which was ardently reciprocated. In the summer of 1864 he met her again on the Rigi, when they resolved to marry. She was a young lady of twenty, decidedly unconventional and original in character, but the daughter of a Bavarian diplomatist then resident at Geneva, who was angry beyond all bounds when he heard of the proposed match, and would have absolutely nothing to do with Lassalle. . .

[*The biographies of* KOSSUTH, GARIBALDI, HENRY GEORGE, G. J. HOLYOAKE, LIEBKNECHT, BRADLAUGH, *among many other reformers, are in the Tenth Edition of the Encyclopædia Britannica.*]

Shall we ever Fly?

It may be safely asserted that we have reached the limit of what is possible with the navigable balloon; and Lord Kelvin warns us that the achievements of Monsieur Santos-Dumont record but a slight progress towards human flight. In the article "AERONAUTICS" in Vol. 25 will be found a reasoned exposition of the advances made during recent years in aërial science.

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THE VALUE OF THE INDEX IN CONNEXION WITH SUBJECTS OF BIOGRAPHICAL INTEREST.

IN Biography the Index will prove invaluable to the reader. For instance, he may have heard of Letizia Ramolino without being able to associate the name with any definite group of facts. In the Index he has merely to turn to the entry

Ramolino, Letizia, 4 27c; 17 192a.

and he will find references to passages in which the mother of the great Napoleon is mentioned in connexion with the facts that he seeks. The age at which she married, the number of her children, the origin of the title "Madame Mère," the frugality of her style in living, and the date of her death, will place the name in its proper association of ideas without any preliminary search which so often dislocates a reader's mind from his original object.

THE GLORY OF THE 18TH CENTURY STAGE.

From the biographical Article on

Garrick.— . . . . . . His father, Captain Peter Garrick, was on a recruiting expedition when his celebrated son was born at Hereford on February 19, 1716–17. The captain usually resided at Lichfield on half pay, but, in order to benefit his large family, he accepted an offer to proceed on service to Gibraltar, in place of a brother officer who was desirous of returning to England. This kept him many years absent from home, and the letters written to him by "little Davy," acquainting him with the doings at Lichfield, are highly interesting memorials of the future Roscius. In his nineteenth year, after receiving a good education at the grammar school of Lichfield, David was sent to the establishment at Edial, opened in June or July 1736 by Samuel Johnson, his senior by seven years. The Edial academy was shut in about six months, and on the 2d of March 1736–7 master and pupil, Johnson and Garrick, left Lichfield for London, the one to commence the study of the law, and the other to try his tragedy of *Irene*—Johnson, as he afterwards said, "with twopence halfpenny in his pocket," and Garrick "with three-halfpence in his." Seven days afterwards, however, Garrick was entered of Lincoln's Inn, but after remaining for a few months in London, he resided for some time with Mr Colson, a distinguished teacher at Rochester (afterwards Lucasian professor at Cambridge). Captain Garrick, who had returned from Gibralter, died about a month after his son's arrival in London. Soon afterwards a rich uncle, a wine merchant at Lisbon, in his will left David a sum of £1000, and he and his brother entered into partnership as wine merchants in London and Lichfield. The concern was not prosperous—though Foote's assertion that he had known Garrick with three quarts of vinegar in the cellar calling himself a wine merchant need not be taken literally—and before the end of 1741 he had spent nearly half of his £1000. His passion for the stage completely engrossed him; he tried his hand both at dramatic criticism and at dramatic authorship, and made his first appearance on the stage late in 1740–1, *incognito*, as harlequin at Goodman's Fields, where Woodward, being ill, allowed him to take his place during a few scenes. When the manager of the same theatre, Giffard, took a party of players to Ipswich, Garrick accompanied them, and there made his first essay as an actor under the name of Lyddal, in the part of the black Aboan (in Southerne's *Oroonoko*). His success on the provincial boards determined his future career. . .

[*Mrs SIDDONS, KEAN, MACREADY, SALVINI, PHELPS, SOTHERN, COQUELIN, and EDWIN BOOTH, are a few only of those historical stage figures whose lives are detailed in the Encyclopædia Britannica.*]

A TRANSATLANTIC POET.

From the Article by H. E. SCUDDER, Litt.D.

Lowell, James Russell.— . . . . . . The spontaneity of Lowell's nature is delightfully disclosed in his personal letters. They are often brilliant, and sometimes very penetrating in their judgment of men and books; but the most constant element is a pervasive humour, and this humour, by turns playful and sentimental, is largely characteristic of his poetry, which sprang from a genial temper, quick in its sympathy with nature and humanity. The literary refinement which marks his essays in prose is not conspicuous in his verse, which is of a more simple character. There was an apparent conflict in him of the critic and the creator, but the conflict was superficial. The man behind both critical and creative work was so genuine, that through his writings, and speech, and action he impressed himself deeply upon his generation in America, especially upon the thoughtful and scholarly class who looked upon him as especially their representative. This is not to say that he was a man of narrow sympathies. On the contrary, he was democratic in his thought, and outspoken in his rebuke of whatever seemed to him antagonistic to the highest freedom. Thus, without taking a very active part in political life, he was recognized as one of the leaders of independent political thought. He found expression in so many ways, and was apparently so inexhaustible in his resources, that his very versatility and the ease with which he gave expression to his thought sometimes stood in the way of a recognition of his large, simple political ideality and the singleness of his moral sight.

WRITINGS.—The *Works of James Russell Lowell*, in ten volumes (Boston and New York, Houghton, Mifflin, and Co.), 1890; latest Literary Essays and Addresses, 1891; *The Old English Dramatists*, 1892; *Conversations on some of the Old Poets* (Philadelphia, David M'Kay) (reprint of the volume published in 1843, and subsequently abandoned by its author), 1893; *The Power of Sound: a Rhymed Lecture* (New York, privately printed), 1896; *Lectures on English Poets* (Cleveland, The Rowfant Club), 1899.

MEMOIRS.—*Letters of James Russell Lowell*, edited by CHARLES ELIOT NORTON, in two volumes (New York, Harper and Brothers), 1899.—*Life of James Russell Lowell*, by HORACE E. SCUDDER (Houghton, Mifflin and Co.), 1901. (H. E. S*.)

[*The Encyclopædia Britannica is rich in poetical biographies. The lives of SHAKESPEARE (34 pages), BYRON, SCOTT, SHELLEY, TENNYSON, BROWNING, SWINBURNE, WALT WHITMAN, can all be studied in the volumes.*]

THE FRONTIERS OF LIFE.

From the Article by Sir HENRY ROSCOE.

Pasteur.— . . . . . . At the inauguration of the Institute Pasteur closed his oration with the following words:—

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For the titles of some of the articles on Literature, see p. 124.

"Two opposing laws seem to me now in contest. The one law of blood and death, opening out each day new modes of destruction, forces nations to be always ready for the battle. The other, a law of peace, work, and health, whose only aim is to deliver man from the calamities which beset him. The one seeks violent conquests, the other the relief of mankind. The one places a single life above all victories, the other sacrifices hundreds of thousands of lives to the ambition of a single individual. The law of which we are the instruments strives even through the carnage to cure the wounds due to the law of war. Treatment by our antiseptic methods may preserve the lives of thousands of soldiers. Which of these two laws will prevail? God only knows! But of this we may be sure, that science, in obeying the law of humanity, will always labour to enlarge the frontiers of life." . . . . .

[*Science, Physiology, and Philosophy are represented in the biographies of the Tenth Edition by such names as* DARWIN, TYNDALL, HUXLEY, Lord KELVIN, HAECKEL, BROWN-SEQUARD, RENAN, BUNSEN, A. R. WALLACE, *and* Lord RAYLEIGH.]

A LETTERED TRAMP.

From the Article by THEODORE WATTS-DUNTON.

George Borrow.— . . . . . . As he stood considerably more than 6 feet in height, was a fairly trained athlete, and had a countenance of extraordinary impressiveness, if not of commanding beauty—Greek in type with a dash of the Hebrew—we may assume that there had never before appeared on the English highroads so majestic-looking a tramp as he who, on an afternoon in May, left his squalid lodging with bundle and stick to begin life on the roads. Shaping his course to the south-west, he soon found himself on Salisbury Plain. And then his extraordinary adventures began. After a while he became a travelling hedge-smith, and it was while pursuing this avocation that he made the acquaintance of the splendid road-girl, born at Long Melford Workhouse, whom he has immortalized under the name of Isopel Berners. .

GEORGE BORROW.
(From the painting by Phillips in the possession of Mr John Murray.)

[GEORGE ELIOT, EMERSON, EDWARD FITZGERALD, FLAUBERT, BRET HARTE, PIERRE LOTI, *are but names taken by chance from the exhaustive list of literary biographies with which the Tenth Edition is enriched.*]

THE ARABIAN NIGHTS.

From the Article by STANLEY LANE-POOLE, *Prof. of Arabic, Trinity College, Dublin.*

Burton.— . . . . . . By far the most celebrated of all his books is the translation of the "Arabian Nights." It is open to criticism in many ways; it is not so exact in scholarship, nor so faithful to its avowed text, as might be expected from his reputation; but it reveals a profound acquaintance with the vocabulary and customs of the Muslims, with their classical idiom as well as their vulgarest "Billingsgate," with their philosophy and modes of thought as well as their most secret and most disgusting habits. The translation itself is often marked by extraordinary resource and felicity in the exact reproduction of the sense of the original; Burton's vocabulary was marvellously extensive, and he had a genius for hitting upon the right word; but his fancy for archaic words and phrases, his habit of coining words, and the harsh and rugged style he affected, detract from the literary quality of the work without in any degree enhancing its fidelity. With grave defects, but sometimes brilliant merits, the translation holds a mirror to its author. He was, as has been well said, an Elizabethan born out of time; in the days of Drake his very faults might have counted to his credit. . . . .

[*Oriental travellers and students,* A. VAMBERY, Sir H. STANLEY, Sir SAMUEL BAKER, Sir H. A. LAYARD, EMIN PASHA, *and many others, have separate articles in the Tenth Edition.*]

THE "MAN OF GOLD."

From the Article by H. SPENSER WILKINSON.

Moltke, Helmuth Carl Bernhard, Count von (1800–1891), Prussian Field-Marshal, for thirty years chief of the staff of the Prussian army, the greatest strategist of the latter half of the 19th century, and the creator of the modern method of directing armies in the field, was born 26th October 1800, at Parchim in Mecklenburg, of a German family of ancient nobility. . . . . His tastes inclined him to literature, to historical study, and to travel. In 1827 he had published a short romance *The Two Friends.* In 1831 it was followed by an essay entitled: *Holland and Belgium in their Mutual Relations from their Separation under Philip II. to their reunion under William I.*, in which were displayed the author's interest in the political issues of the day, and his extensive historical reading. In 1832 appeared *An Account of the Internal Circumstances and Social Conditions of Poland*, a second study of a burning question based both on reading and on personal observation of Polish life and character. In 1832 he contracted to translate Gibbon's *Decline and Fall* into German, for which he was to receive £75, his object being to earn the money to buy a horse. In eighteen months he had finished nine volumes out of twelve, but the publisher failed to produce the book, and Moltke never received more than £25, so that the chief reward of his labour was the historical knowledge which

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he acquired. . . . . As a strategist Moltke cannot be estimated by comparison with Frederick or Napoleon, because he had not the authority either of a king or of a commander-in-chief. While it is doubtful whether he can be convicted of any strategical errors, it seems beyond doubt that he never had to face a situation which placed any strain on his powers, for in the campaigns of 1866 and 1870 his decisions seemed to be made without the slightest effort, and he was never at a loss. The present generation of strategists owes its best ideas to him and is incapable of criticising him.

He was a tall spare figure, and in his latter years his tanned features had received a set expression which was at once hard and grand. He was habitually taciturn and reserved, though a most accomplished linguist, so that it was said of him that he was "silent in seven languages." The stern school of his early life had given him a rare self-control, so that no indiscreet or unkind expression is known to have ever fallen from him. Long before his name was on the lips of the public he was known in the army and in the staff as the "man of gold," the ideal character whom every one admired and who had no enemies. . . . .

[*Great soldiers, past and present,* Prince RUPERT, MARLBOROUGH, Marshal SAXE, WELLINGTON, General GALLIFET, SHERMAN, Lord ROBERTS, *figure largely in the Encyclopædia Britannica as subjects of biographical articles.*]

A GREAT ENGLISH CHURCHMAN.

From the Article (*2 pages*) *by* J. BASS MULLINGER, *M.A.*

Parker, Matthew (1504–1575).— . . . . . . His industry as a student and his general ability marked him out for early notice; and when, in 1521, Wolsey was founding Cardinal College (afterwards Christ Church), Oxford, Parker was one among a number of rising Cambridge students who were invited to become fellows of the new society. Fortunately, however, for himself and for Cambridge he elected to stay at Corpus. The university was at this time becoming a great centre of the Reformation movement, and he found himself attracted to the meetings held at the White Horse (an inn in the town), which the Catholic party derisively styled "Germany," from the fact that it was the known rendezvous of the supporters of Lutheran tenets. Among those with whom he was thus brought into contact was Bilney, the martyr; and when, in 1531, the latter was burned at Norwich, Parker attended him in his last hours, and afterwards bore testimony to his constancy. On Cranmer's election to the archbishopric of Canterbury, Parker received a licence to preach, and soon became known in Cambridge and its neighbourhood as a divine of considerable oratorical power. He was summoned to preach at court; and in 1535 the queen, Ann Boleyn, appointed him her chaplain. . . . . In one of his letters to Cecil, written about 1543, he confesses to a "natural viciosity of overmuch shamefacedness"; and this constitutional defect would seem, at this time, to have been aggravated by a state of health which made it necessary for him to obtain the permission of the university, when preaching in St Mary's, Cambridge, to do so with his head covered. In the year 1538 he was created D.D. Although his indifferent health and love of study alike inclined him to a retired life, his seclusion was frequently broken in upon by honours and preferment which came unsought. He was selected by Thomas Cromwell to preach at Paul's Cross, on account of "his learning in holy letters and uncorrupt judgment in the same." . . . .

When Queen Mary ascended the throne, most of the college heads at Cambridge were deprived of office, and Parker only forestalled a like fate by resignation. The fact of his being a married man alone sufficed to entail the loss of all his ecclesiastical preferments. He did not, however, like many of the leaders of his party, fly from the country, but lived in strict retirement, his place of residence being a secret which appears to have died with him.

. . . .

A fall from horseback, when he was on one occasion compelled to flee by night from Mary's emissaries, resulted in a permanent injury (his language appears to imply a rupture) which still further disinclined him to active and laborious public duties; and upon Elizabeth's accession he evinced little readiness to avail himself of prospects of preferment held out by Sir Nicholas Bacon, the lord keeper. He believed himself to be summoned by duty to return to his former sphere of labour at Cambridge, at that time, like Oxford, in a singularly depressed and unsatisfactory condition. "Of all places in England," he writes to Bacon, "I would wish to bestow most of my time in the university, the state whereof is miserable at this present." His services were needed, however, for a wider sphere of action; and in December 1558 he was summoned by royal command to London, where it was intimated to him that he was to be appointed to the primacy.

. . . . . . The delay which took place in his consecration arose from the fact that the three bishops named in the original warrant (Tonstal, Bourne, and Poole) refused to act, and a second warrant was consequently found necessary. In the following century the Romanist party sought, by circulating the "Nag's Head fable," to throw discredit on Parker's consecration by representing that he, together with certain other bishops, was simply ordained, and that too in an irreverent and uncanonical fashion, at a tavern in Fleet Street. The evidence which contravenes this story (see Pocock's edition of Burnet's *History of the*

The Mastery of the Pacific

In Lord Beaconsfield's time it was the political fashion to look towards Eastern Europe and the Balkan States for the appearance of that cloud no larger than a man's hand which was to herald an European war. A little later it was to the North-West frontiers of India and the district around Herat that far-seeing statesmen looked for trouble. But to-day political prophets seem to agree that the future battle-ground of the Great Powers will be the waters of the Pacific. There, if at all, will the Anglo-Japanese alliance become active, and in such an international conflict victory will be for those who have the Mastery of the Pacific. The Tenth Edition of the *Encyclopædia Britannica*, in the articles "COMMAND OF THE SEA," "COMPARATIVE STRENGTH OF NAVIES," "SEA POWER," and under many other headings, gives the reader materials for forming an opinion on this vital problem.

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Reformation, vol. v.) is, however, singularly full and satisfactory.

During the fifteen years of his primacy Parker's best energies were devoted to defining more accurately the discipline and belief of the newly constituted Church of England, and to bringing about a general conformity. The Thirty-Nine Articles were passed by convocation under his presidency in 1562. In the year 1566 he issued his celebrated "Advertisements," "for the due order in the public administration of common prayers and using the holy sacraments, and for the apparel of all persons ecclesiastical."

. . . .

[WOLSEY, CRANMER, LATIMER, RIDLEY, GARDINER, LAUD, HOOKER, BURNET, *are names representative of historical Churchmen whose lives form the subject of articles in the Tenth Edition.*]

THE CREATOR OF THE IMPERIAL IDEA.

From the Article (10 pages) by F. GREENWOOD.

Beaconsfield.— . . . . . . The news that the Khedive's Suez Canal shares had been bought by the Government was received with boundless applause. It was a courageous thing to do; but it was not a Disraelian conception, nor did it originate in any Government department. It was suggested from without at a moment when the possibility of ever acquiring the shares was passing away. On the morning of the 15th of November 1875, the then editor of the *Pall Mall Gazette* went to Lord Derby at the Foreign Office, informed him that the Khedive's shares were passing into the hands of a French syndicate, and urged arrest of the transaction by purchase for England. (The shares being private property their sale could not, of course, be forbidden.) Lord Derby thought there must be a mistake. He could not believe that bargaining of that kind could go on in Cairo without coming to the knowledge of the British Consul there. He was answered that nevertheless it was going on. The difficulties of purchase by England were then arrayed by Lord Derby. They were more than one or two, and of course they had a formidable look; but so also had the alternative and the lost opportunity. One difficulty had already come into existence, and had to be met at once. Lord Derby had either to make direct inquiry of the Khedive or to let the matter go. If he inquired, and there was no such negotiation, his question might be interpreted in a very troublesome way; moreover, we should put the idea of selling the shares into the Khedive's head, which would be unfortunate. "There's my position, and now what do you say?" The answer given, Lord Derby drafted a telegram to the British Consul-General at Cairo, and read it out. It instructed Colonel Stanton to go immediately to the Khedive and put the question point blank. Meanwhile the prime minister would be seen, and Lord Derby's visitor might call next day to hear the reply from Cairo. It is enough to add here that on receipt of the answer the purchase for England was taken up and went to a speedy conclusion. . . . .

Suez Canal shares.

. . . . . . How could it be imagined that with six years of power from his seventieth year, the Jew "adventurer," mysterious and theatrical to the last, should fill a greater space in the mind of England twenty years after death than Peel or Palmerston after five? Of course it can be explained; and when explained, we see that Disraeli's good fortune in this respect is not due entirely to his own merits. His last years of power might have been followed by as long a period of more acceptable government than his own, to the effacement of his own from memory; but that did not happen. What did follow was a time of universal turbulence and suspicion, in which the pride of the nation was wounded again and again. To say "Majuba" and "Gordon" recalls its deepest hurts, but not all of them; and it may be that a pained and angry people, looking back, saw in the man whom they lately displaced more than they had ever seen before. From that time, at any rate, Disraeli has been acknowledged as the regenerator and representative of the Imperial idea in England. He has also been accused on the same grounds; and if the giver of good wine may be blamed for the guest who gets drunk on it, there is justice in the accusation. It is but a statement of fact, however, that Disraeli retains his hold upon the popular mind on this account mainly. The rekindling of the Imperial idea is understood as a timely act of revolt and redemption: of revolt against continuous humiliations deeply felt, redemption from the fate of nations obviously weak and suspected of timidity. It has been called rescue-work—deliverance from the dangers of invited aggression and a philosophical neglect of the means of defence. . . .

[Earl DERBY, Lord LOCH, Prince LOBANOFF, De GIERS, GAMBETTA, Lord SALISBURY, and JOHN BRIGHT *are but a few of the modern statesmen to each of whom an article is devoted in the Tenth Edition.*]

DOMESTIC FICTION.

From the biographical Article on

Austen, Jane.— . . . . . . The novels most popular at that time belonged to the class of which Mrs Radcliffe's *Udolpho*, Goodwin's *St Leon* or *Caleb Williams*, and Lewis's *Monk* are the best known representatives. Against this style of fiction Miss Austen from the first set her face; she had a remarkably keen sense of humour, and the ludicrous aspect of these thrilling incidents, mysterious situations, and unnatural characters, presented itself very strongly to her mind. *Northanger Abbey*, one of her earliest productions, is a clever and well-sustained parody on romances of this type. She did not, however, confine herself to mere negative criticism, but resolved to show that the interest of readers could be roused and sustained by a story absolutely free from the whole machinery of romance and exaggerated sentiment, but presenting an accurately-drawn picture of quiet, natural life. This task she accomplished with complete success; she was the first to introduce the novel of domestic life, and her writings are still the best specimens of that class of fiction. . . .

. . . . . . In the hands of most writers such materials would infallibly become monotonous and tiresome; but from any danger of this Miss Austen is completely freed by her wonderful power of exciting interest in the "involvements and feelings of ordinary life," and the skill with which, by a series of imperceptible but effective touches, she discriminates her characters, rounds them off, and makes them stand out from the canvas real and living personages. . . . .

[*Of the many women-writers whose biographies appear in the Tenth Edition,* GEORGES SAND, FANNY BURNEY, CHARLOTTE BRONTË, ELIZABETH BARRETT BROWNING, *and* Miss MITFORD *are but a few characteristic names.*]

A QUEEN OF TRAGEDY.

From the biographical Article on

Bernhardt, Sarah.— . . . . . . Her earliest years were spent in Holland. When she was thirteen she

The race for dominion in Africa between England and the Great Powers is fully described in the Tenth Edition.

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entered the Paris Conservatoire, where she gained the second prize for tragedy in 1861 and the same for comedy in 1862. Her first appearance at the Comédie Française was made in a minor part in Racine's *Iphigénie* without any marked success, and her career there was speedily interrupted by her having the temerity to slap the face of one of the "leading ladies," whom she considered to have insulted her sister. After a year spent in playing burlesque parts at the Porte St Martin and Gymnase theatres, she took a sudden trip to Spain; but having spent all her money, she returned, and became a member of the company at the Odéon in 1867. There she made her first definite success as the Queen in *Ruy Blas*. During the siege of Paris she organized an ambulance service in the theatre. When peace was restored she left the Odéon for the Comédie Française, thereby incurring a considerable monetary forfeit. Her *début* at the Comédie Française was made in November 1872 as Gabrielle in *Mademoiselle de Belle Isle*. From that time she steadily increased her reputation, in spite of an uphill fight against adverse criticism, two of the most definite steps in her progress being her performances as Phèdre (in December 1874), and Doña Sol in *Hernani* (in November 1877). In 1879 she came to London with the company of the Comédie Française for their famous season at the Gaiety Theatre. . . . . .

[*All the great figures of the modern stage are subjects of biographical notice in the Tenth Edition of the Encyclopædia Britannica.*]

MAETERLINCK: A PROSE-POET.

From the Article (9 pages) by J. DU FIEF, L. LECLÈRE, and ARTHUR SYMONS.

Belgium.— . . . . . . In his plays he is always concerned with spiritual issues, with action as it might be seen in dreams, with a world reflected in a chamber of mirrors, with disembodied passions and the tragedies of childish and ghostly souls. He has invented a whole theatre of marionettes, who are more mysteriously simple than human beings; he has made the stage at once more subjective and more pictorial than it ever was before. In his essays he is content to speak with his own voice, and his own voice is more beautiful, and has more beautiful and profound things to say, than the feigned voices of his characters. Speaking without intermediary, he speaks with a more absolute abandonment of every convention of human reserve, except the reserve of an extreme fastidiousness in the choice of words simple enough and sincere enough to convey exactly his meaning, more spontaneously, it would seem, than any writer since Emerson. His essays might well be the favourite reading of those to whom beauty must come with a certain dogmatism, if it is to be accepted for what it is. . . . .

[BJÖRNSON, IBSEN, NIETSZCHE, DRACHMANN, GNEIST, TREITSCHKE, *are some of the celebrated Continental writers who figure in the Encyclopædia Britannica.*]

Sir Leslie Stephen, K.C.B. writes on CARLYLE in Vol. 26.

A MASTER NOVELIST.

From the Life of

Meredith.— . . . . . . It was early in 1856 that the *Shaving of Shagpat* made its appearance, and, despite the fact that the hour was particularly rich in literary production, it was at once recognized as a work of singular imagination, richness, and romance. George Eliot was one of the first to acclaim its excellence, and Dante Gabriel Rossetti was among its enthusiastic eulogists. Its success was not, perhaps, popular, but it was at least genuine, and the book remains one of the most fascinating in the language. Modelled upon the *Arabian Nights*, it catches with wonderful ardour the magical atmosphere of Orientalism; through its city of "yellow domes and black cypresses, silver fountains and marble pillars," the reader wanders with all the circumstance of imaginative actuality. Mr Meredith, in casting about for a new field, was less fortunate in inspiration. It occurred to him to turn his familiarity with the life and legendary tradition of the Rhinelander into a sort of imitation of the grotesquerie of the German romanticists, and in the following year, 1857, he put forth *Farina, a Legend of Cologne*, which sought to transfer to English sympathies the spirit of German romance in the same way that *Shagpat* had handled Oriental fairy-lore. The result was less successful. The plot of *Farina* lacks fibre, its motive is insufficient, and the diverse elements of humour, serious narrative, and romance scarcely stand in proportion to one another. If, however, *Farina* lost him a little ground, the *Ordeal of Richard Feverel*, which followed in 1859, transferred Mr Meredith at once to a new sphere and to the altitude of complete success. With this novel Mr Meredith deserted the realm of fancy for that of the philosophical and psychological study of human nature, and *Richard Feverel* was the first, as it is perhaps the favourite, of those wonderful studies of motive and action which placed him at the head of contemporary novelists. The theme of this fine study is the question of a boy's education. It depicts the abortive attempt of a proud and opinionated father, hidebound by theory and precept, to bring up his son to a perfect state of manhood through a "system" which controls all his early circumstances and represses many of the natural and wholesome instincts and impulses of adolescence. The love scenes in *Richard Feverel* are specially fresh and full of vitality, and marked a revolution in the English treatment of clean and manly passion. . . . . . .

[DICKENS, THACKERAY, CHARLES READE, W. BLACK, BLACKMORE, THOMAS HARDY, STEVENSON, *are a few of the English novelists whose lives are written in the Tenth Edition.*]

A GREAT SUCCESSOR TO JENNY LIND.

From the biographical Article on

Patti.— . . . . . . In 1861 she sang in *La Sonnambula* at Covent Garden, and from this time she became the leading operatic *prima donna*, her appearances in London, Paris, and the other principal musical centres, being a long succession of triumphs, and her *rôles* covering all the great parts in Italian opera. In 1868 she married the marquis de Caux, from whom she was divorced in 1885; she then married Nicolini, the tenor, who died in 1898; and in 1899 she became the wife of Baron Cederström, a Swede, who was naturalized as an Englishman. Madame Patti ceased to appear on the operatic stage in public after the 'eighties, but at Craig-y-Nos, her place in Wales, she built a private theatre, and her occasional appearances for enormous fees at concerts at the Albert Hall continued to attract enthusiastic audiences, her singing of "Home, Sweet Home" becoming peculiarly associated with those events. Partly owing to her fine original training, partly to her splendid method, and partly to her avoidance of Wagnerian *rôles*, Madame Patti wonderfully preserved the freshness of her voice and her beautiful execution, and she will be remembered as, after Jenny Lind, the greatest singer of the 19th century. . . . .

[SIMS REEVES, Madame TIETJENS, G. MARIO, Signor FOLI, *are some of the vocalists whose biographies appear in the Tenth Edition of the Encyclopædia Britannica.*]

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For the titles of only a few of the Articles on LAW in the Tenth Edition see pp. 61-69 of this Pamphlet.

A TORY CHANCELLOR.

From the biographical Article on Lord ELDON.

Eldon, John Scott, Baron, and afterwards Earl of (1751–1838), lord high chancellor of England, was born at Newcastle on the 4th June 1751. His grandfather, William Scott of Sandgate, a suburb of Newcastle, was clerk to a "fitter"—a sort of water-carrier and broker of coals. His father, whose name also was William, began life as an apprentice to a fitter, in which service he obtained the freedom of Newcastle, becoming a member of the guild of Hoastmen; later in life he became a principal in the business, and attained a respectable position as a merchant in Newcastle, accumulating property worth nearly £20,000. He was twice married; his second wife, the mother of John Scott, says Lord Campbell (*Lord Chancellors*, vol vii. p. 4), "was a woman of such superior understanding, that to her is traced the extraordinary talent which distinguished her two sons, William and John—Lord Stowell and Lord Eldon." It may be mentioned that William and John had each of them a twin sister. . . . .

. . . . . . In 1776 he was called to the bar, intending at first to establish himself as an advocate in his native town, a scheme which his early success led him to abandon, and he soon settled to the practice of his profession in London, and on the Northern Circuit. Thus, at last, had he started on the high road to the chancellorship, having narrowly escaped becoming a coal-fitter, a country parson, a provincial barrister, and, according to one account, a retailer of figs and raisins.

In the autumn of the year in which he was called to the bar his father died, leaving him a legacy of £1000 over and above the £2000 previously settled on him. He was already an excellent lawyer, and succeeded fairly well on his first circuit, though not so well as to satisfy him of the safety of attempting a London career. He therefore took a house in Newcastle, with the view of establishing himself there, but still delayed to leave London; and his prospects there suddenly improving, he assigned the Newcastle house to his brother Henry. In his second year at the bar his prospects began to brighten. His brother William, who by this time held the Camden professorship of ancient history, and enjoyed an extensive acquaintance with men of eminence in London, was in a position materially to advance his interests. Among his friends was the notorious Bowes of Gibside, to the patronage of whose house the rise of the Scott family was largely owing. Bowes having contested Newcastle and lost it, presented an election petition against the return of his opponent. Young Scott was retained as junior counsel in the case, and though he lost the petition he did not fail to improve the opportunity which it afforded for displaying his talents.

[*See also the lives of* ELLENBOROUGH, THURLOW, BROUGHAM, CAIRNS, SELBORNE, ESHER, COLERIDGE, *&c., &c.*]

THE CAREER OF A GREAT BIOLOGIST.

From the Article on HUXLEY.

Huxley, Thomas Henry (1825–1895), the most distinguished English biologist (if in a different field we except Charles Darwin) of the 19th century, was born on the 4th of May 1825 at Ealing, where his father, George Huxley, was senior assistant-master in the school of Dr Nicholas. This was an establishment of repute, and is at any rate remarkable for having produced two men with so little in common in after life as Huxley and Cardinal Newman. The cardinal's brother, Francis William, had been "captain" of the school in 1821. Huxley was a seventh child (as his father had also been), and the youngest who survived infancy. Of Huxley's ancestry no more is ascertainable than in the case of most middle-class families. He himself thought it sprang from the Cheshire Huxleys of Huxley Hall. Different branches migrated south, one, now extinct, reaching London, where its members were apparently engaged in commerce. They established themselves for four generations at Wyre Hall, near Edmonton, and one was knighted by Charles II. Huxley describes his paternal race as "mainly Iberian mongrels, with a good dash of Norman and a little Saxon." From his father he thought he derived little except a quick temper and the artistic faculty which proved of great service to him and reappeared in an even more striking degree in his daughter, the Hon. Mrs. Collier. "Mentally and physically," he wrote, "I am a piece of my mother." Her maiden name was Rachel Withers. "She came of Wiltshire people," he adds, and describes her as "a typical example of the Iberian variety." He tells us that "her most distinguishing characteristic was rapidity of thought. . . . That peculiarity has been passed on to me in full strength" (*Essays*, i. 4). One of the not least striking facts in Huxley's life is that of education in the formal sense he received none. "I had two years of a pandemonium of a school (between eight and ten), and after that neither help nor sympathy in any intellectual direction till I reached manhood" (*Life*, ii. 145). After the death of Dr Nicholas the Ealing school broke up, and Huxley's father returned about 1835 to his native town, Coventry, where he had obtained a small appointment. Huxley was left to his own devices; few histories of boyhood could offer any parallel. At twelve he was sitting up in bed to read Hutton's *Geology*. His great desire was to be a mechanical engineer; it ended in his devotion to "the mechanical engineering of living machines." His curiosity in this direction was nearly fatal; a *post-mortem* he was taken to between thirteen and fourteen was followed by an illness which seems to have been the starting-point of the ill-health which pursued him all through life. . . . .

The naval medical service exists for practical purposes. It is not surprising, therefore, that after his three years' nominal employment Huxley was ordered on active service. Though without private means of any kind, he resigned. The navy, however, retains the credit of having started his scientific career as well as that of Hooker and Darwin. Huxley was now thrown on his own resources, the immediate prospects of which were slender enough. As a matter of fact, he had not to wait many months. His friend Edward Forbes was appointed to the chair of Natural History in Edinburgh, and in July 1854 he succeeded him as lecturer at the School of Mines and as naturalist to the Geological Survey in the following year. The latter post he hesitated at first to accept, as he "did not care for fossils" (*Essays*, i. 15). In 1855 he married Miss H. A. Heathorn, whose acquaintance he had made in Sydney. They were engaged when Huxley could offer nothing but the future promise of his ability. The confidence of his devoted helpmate was not misplaced, and her affection sustained him to the end, after she had seen him the recipient of every honour which English science could bestow. His most important research belonging to this period was the Croonian Lecture delivered before the Royal Society in 1858 on "The Theory of the Vertebrate Skull." In this he completely and finally demolished, by applying as before the inductive method, the idealistic, if

Lord Davey writes on LAW in Vol. 30.

The Tenth Edition contains a lengthy biographical study of Darwin.

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in some degree evolutionary, views of its origin which Owen had derived from Goethe and Oken. This finally disposed of the "archetype," and may be said once for all to have liberated the English anatomical school from the deductive method.

In 1859 *The Origin of Species* was published. This was a momentous event in the history of science, and not least for Huxley. Hitherto he had turned a deaf ear to evolution. "I took my stand," he says, "upon two grounds: firstly, that . . . the evidence in favour of transmutation was wholly insufficient; and, secondly, that no suggestion respecting the causes of the transmutation assumed, which had been made, was in any way adequate to explain the phenomena" (*Life*, i. 168). Huxley had studied Lamarck "attentively," but to no purpose. Lyell "was the chief agent in smoothing the road for Darwin. For consistent uniformitarianism postulates evolution as much in the organic as in the inorganic world" (*l.c.*); and Huxley found in Darwin what he had failed to find in Lamarck, an intelligible hypothesis good enough as a working basis. Yet with the transparent candour which was characteristic of him, he never to the end of his life concealed the fact that he thought it wanting in rigorous proof. Darwin, however, was a naturalist; Huxley was not. . . . .

[*Prof. Huxley's grim battle with life-long ill-health is sympathetically related in the biography from which the above extracts are taken.*]

The Rt. Hon. John Morley writes on COMTE in Vol. 6.

A PRINCE OF ROMANCERS.

From the Article by PERCY FITZGERALD, *author of "Romance of the English Stage."*

Dumas, Alexandre (1802–1870), one of the most remarkable characters that the 19th century has produced, was the son of General Dumas and of Marie Labouret, an innkeeper's daughter. His father was an officer of remarkable gallantry, who for his dashing exploits had obtained the odd title of the "Horatius Cocles of the Tyrol." He was a creole, the illegitimate son of the Marquis Davy de la Pailleterie, and of Louise Dumas, a black woman of St Domingo. Long after, his grandson was to excite the laughter of Paris by claiming this title, and assuming the family arms. The general had an insubordinate temper, and excited the dislike and suspicion of Napoleon, who sent him back from Egypt to languish in obscurity, and die of disappointment at Villers-Cotterets in the year 1806.

Alexandre Dumas was born on July 4, 1802, at Villers-Cotterets, where he was brought up under the care of an affectionate and pious mother. . . . .

. . . . Meanwhile the visit of Macready and other English players to Paris had introduced him to Shakespeare, and had set him to work on a grand romantic and historical drama which he called *Christine*. The young clerk had the boldness to look forward to having it presented on the boards of the first theatre in France, and, with an energy and spirit that should encourage every friendless aspirant, set every resource he could command at work. Charles Nodier introduced him to Baron Taylor, the literary director of the theatre, who, if we are to credit Dumas, was so enchanted with the work that he accepted it and submitted it to the company at once. . . . .

. . . . . . But it happened that another *Christine* was supported by even greater influence, and Dumas's had to be withdrawn. In a short time he had written *Henri III.* which was produced (February 11, 1829) with the most extraordinary results. This piece was important as being the first success of the well-known "Romantic school." *Henri III.*, it is said, brought its author about £2000. But the revolution of July now broke out and interrupted every literary scheme.

It was, however, welcomed by the creole's son, who flung himself with ardour into the struggle.

. . . .

In 1842 he married an actress named Ida Ferrier, who had performed in his plays; but the union was not a happy one, and, after a rather extravagant career, the lady retired to Florence, where she died in the year 1859. Hitherto his success, though remarkable, could not be called European, and he was not to be distinguished from the crowd of French professional *littérateurs*. But in 1844 the famous *Monte Christo* appeared, which may be said to have excited more universal interest than any romance since *Robinson Crusoe* or *Waverley*. The extraordinary colour, the never-flagging spirit, the endless surprises, and the air of nature which was cast over even the most extravagant situations, make this work worthy of the popularity it enjoyed in almost every country of the world. It was followed by the no less famous *Three Musketeers*. These productions were the more remarkable as they were written from day to day for the readers of a newspaper, and thus firmly established the *feuilleton* as a necessary element of French literature. In this, as in other departments where he was successful, Dumas was not original, and only took up the idea of a successful predecessor, Eugène Sue, whose *Juif Errant* had enjoyed much popularity in this shape.

This triumph made him, as it were, irresponsible in the literary world, and suggested to him a series of wholesale operations for supplying the public with books, the history of which makes an extraordinary chapter in literature. He contracted for innumerable stories, each of great length, and to be published at the same time, almost any one of which would be beyond the powers of a single writer. In a single year, 1844, he issued some forty volumes, and later on he engaged himself even more deeply to meet these heavy demands. He began by employing one or two assistants, with whose aid he furnished his two great stories; and it may be said that, with his constant supervision and inspiration, his daily direction, suggestion of incidents, manipulation of the ideas of others, consultations, &c., he might almost fairly claim the credit of having written *Monte Christo* and the *Three Musketeers*. His most valuable assistant was Maquet. . . . .

But presently the popular writer found that even this form of partnership was too great a tax upon his time, and he began to proceed upon the simpler process of ordering works from clever young writers, to whom he suggested a subject and perhaps a simple outline of treatment—and then issuing their work with his name. Some care in the selection was at first exercised, but later he accepted any stuff that was brought to him—travels, essays, stories—and endorsed them with his name. Indeed a volume could be filled with the odd details and complicated ramifications of this system, which was exposed in the most unsparing fashion by Granier de Cassagnac, Jacquet *alias* "De Mirecourt," and Quérard. Dumas justified his system of appropriating from dead and living authors by a theory of what he called "conquests." "All human phenomena," he says, "are public property. The man of genius does not steal, he only conquers. Every one arrives in his turn and at his hour, seizes what his ancestors have left, and puts it into new shape and combinations."

In the meantime he was earning vast sums. Leaving the work of composition to his journeymen, he now entered on a new and reckless course, with a view of dazzling his countrymen and gratifying his own Eastern taste. In this view he built a vast theatre for the production of his own

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Ignorance One Feels Ashamed Of

HOW often it happens to each of us, at the dinner table of a friend, in the railway carriage, at the club, or at table d'hôte in a hotel on our holidays, to become involved in a conversation or an argument on some point of general interest, some topic upon which all men of education should be informed. It may be the pros and cons of electric traction, the intricate controversy of Free Trade, the merits of the turbine, or the difficulties of such international questions as Treaty Ports or Exterritoriality. Some cardinal principles of law, of science, of economics are involved, and perhaps you find yourself the only one of the group not conversant with them. You feel ashamed of your ignorance, and you resolve to remedy it at once. What happens?

Just as in numerous other circumstances of life, you have three courses open. You may order a technical text-book on one general subject in which you may seek for the minute piece of information, the ignorance of which has been the source of your humiliation. But before you find what you want, the phrase "*Searching for a needle in a bundle of hay*" will occur again and again to your mind in exasperating reiteration. You will abandon your search in despair. Another way out of your difficulty would seem to be the purchase of a popular primer which offers no obstacles in the form of unwieldy dimensions. Here, it is true, you will find less hay, but the chances are that you will also find no needle.

The superiority of a work like the *Encyclopædia Britannica* will now become obvious to you. For in this book alone you will find as much or as little information as you seek with a minimum of labour expended on the search, thanks to the magical properties of an Index more voluminous than has ever yet been composed.

It has been said again and again, and cannot be repeated too often, that a dull and ill-directed search is a sterilising, unprofitable, brainfagging operation, which robs final discovery of all its freshness and charm. Moreover, in works constructed on a less generous scale than the *Encyclopædia Britannica* there is considerable chance of never making the discovery at all, because the fact to be discovered may not be there. Fancy the Prince in the fairy story breaking through bramble and briar to find a palace with the lights all out and the Sleeping Beauty fled.

The seeker of every kind, from the most humble to the most ambitious, will make no expedition into the pages of the Tenth Edition without coming upon his reward swiftly, easily—inevitably.

works, and a gorgeous castle at St Germain, on the model of a palace in a fairy tale, on which he lavished every adornment. While these follies were in progress he succeeded in getting himself attached to the suite of the young duke of Montpensier, then (1846) setting out for Madrid to be married, and received besides a sort of commission from the Government to visit Algeria, with a view to making it popular by a lively account from his pen. He was granted a passage to Oran on board one of the Government mail boats, but, through an awkward misconception, was allowed to divert this vessel from her regular service, and used her for visiting Carthage, Tunis, and other places. On his return there was much scandal, and the ministry was very severely interrogated as to the irregularity of allowing "a contractor for stories" to make so free with public property. It was explained that this was entirely owing to a misrepresentation of the popular writer's. Another rebuff, too, was waiting him; for, having completely neglected his engagements to the various newspapers while making this agreeable tour, he found himself engaged in heavy lawsuits with no less than seven journals, including the *Constitutionnel* and the *Presse*. After defending himself in person, a performance that was the entertainment of all Paris, he was cast in damages. This was the beginning of his disasters. His theatre, after opening with one of his pieces which took two nights to perform, fell on evil days, and the revolution of 1848 plunged it into difficulties. In these new scenes he was by no means popular, being suspected from his assiduous attendance on the Orleans family. By this time all his best works had been written; and he was now only to attract attention by some extravagant literary somersault or impudent attempt at "humbugging" the public. He attempted newspapers like the *Mousquetaire*, of which he would grow tired after a few numbers, but to every article in which he was ready to attach his name. His next escapade was joining Garibaldi (1860), whose messenger and lieutenant he constituted himself; and, in reward for some trifling service, he claimed the appointment of "director of the museum and explorations" at Naples, an office he was presently forced to resign. . . .

. . . .

[*These extracts are taken at random from the fascinating story of the great novelist's life in the Tenth Edition.*]

THE FIRST FRENCH-CANADIAN PREMIER.

From the biographical Article on

Laurier.— . . . . In 1874 he was elected to the Dominion Parliament, where by his high personal character and great oratorical gifts he soon became one of the leaders of the Liberal party. At one time he edited *Le Défricheur*. In 1877 Laurier was appointed Minister of Inland Revenue in the Mackenzie government, a position which he held until the resignation of the ministry in 1878. He was a consistent advocate of the policy of Free Trade, so far as the revenue requirements of the colony would allow. Although a Roman Catholic, his uncompromising resistance to the dictation of the Roman Catholic hierarchy on the Manitoba schools question demonstrated that he was independent of clerical influence in political affairs. On the retirement of Mr Blake from the leadership of the Liberal party in 1891

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Laurier was chosen as his successor. When the Conservative Premier brought forward proposals for a reciprocity treaty with the United States, with certain restrictions, Laurier and the Liberals advocated unrestricted reciprocity. At the general election of 1896 Laurier's platform included fiscal reform in the direction of Free Trade, the extension of the franchise, the enlargement of the trade of Canada, and a policy of non-interference with provincial politics, especially with regard to Manitoba. The Liberals secured a striking victory—the numbers being, 118 Liberals, 86 Conservatives, and 8 Independents, who were general supporters of the Liberal party. Laurier became Prime Minister, and the session of 1897 was distinguished for its epoch-making financial measures, a preferential rate in the tariff being given to imports from the mother-country (see CANADA). . . . .

[*Sir HARRY PARKES, Sir J. A. MACDONALD, Sir G. GREY, Lord LOCH, and all the great builders of the Empire, have a place in the Tenth Edition.*]

AN EMINENT MODERN LAWYER.

From the Life of

Herschell.— . . . . . The first occasion on which Herschell greatly distinguished himself in court was as counsel for a young woman who was indicted at Carlisle for the murder of her illegitimate child, aged some two years, by drowning it in the Eden. The trial took place before Baron Bramwell, and at his request Herschell defended the accused. He did not succeed in obtaining an acquittal, the evidence against his client being too strong, but he made so powerful a speech to the jury, that the learned baron commenced his summing up as follows:—"Gentlemen, there is one aspect of this trial which makes me proud of the profession to which I belong. The prisoner at the bar has apparently not a friend nor a shilling in the world, but no wealth or position could possibly have bought a more able, more eloquent, or more zealous defence than that which has been made on her behalf." This piece of "luck" (if that is the right word) became the opportunity which, being taken advantage of to the full, brought other opportunities in its train. Business began to flow in gradually, but not in any rushing stream. On the promotion of Quain to the bench in 1872 Herschell applied to be made a queen's counsel, an application which was granted as a matter of course.

. . . .

. . . . . . Herschell now thought he saw the Solicitor-Generalship slipping away from him, and along with it all prospect of high promotion. Lord Selborne and Sir Henry James, however, successively declined Mr Gladstone's offer of the Woolsack, and in 1886 Herschell, by a sudden turn of fortune's wheel, found himself in his forty-ninth year Lord Chancellor. This event had been neatly foreshadowed in a song written for some theatricals which took place at Christmas 1885 at Whitburn Hall, county Durham, the country house of the late Sir Hedworth Williamson, and sung in a burlesque by Sir Hedworth's eldest son, who was supposed to have met with a similar rebuff in a neighbouring constituency. The author of the song was Herschell's friend, Mr Hugh Shield, Q.C., "the poet of the northern circuit." One of its stanzas ran thus—

I then threw up the sponge—reflecting
 How oft electors judgment lack,
And felt less sore on recollecting
 That e'en Sir Farrer gets the sack.
Oh yes—he'll get the Sack again, too,
 In spite of North Lonsdale's defeat,
A worthier honour he'll attain to
 And on the Woolsack find a seat.

. . . .

[*One only of the many characteristic sketches of modern lawyers to be found in the Tenth Edition of the Encyclopædia Britannica.*]

THE FOUNDER OF A NEW HISTORICAL SCHOOL.

From the biographical Article on

Freeman.— . . . . . For some years he was an active county magistrate. He was deeply interested in politics, was a follower of Mr Gladstone, and approved the Home Rule Bill of 1886, but objected to the later proposal to retain the Irish members at Westminster. To be returned to Parliament was one of his few ambitions, and in 1868 he unsuccessfully contested Mid-Somerset. Foreign rather than domestic politics had the first place with him. Historical and religious sentiment combined with his detestation of all that was tyrannical to inspire him with hatred of the Turk and sympathy with the smaller and subject nationalities of Eastern Europe. He took a prominent part in the agitation which followed "the Bulgarian atrocities"; his speeches were intemperate, and he was accused of uttering the words "Perish India!" at a public meeting in 1876. This, however, was a misrepresentation of his words. He was made a knight commander of the order of the Saviour by the king of Greece, and also received an order from the prince of Montenegro.

Freeman advanced the study of history in England in two special directions, by insistence on the unity of history, and by teaching the importance and right use of original authorities. History is not, he urges, to be divided "by a middle wall of partition" into ancient and modern, nor broken into fragments as though the history of each nation stood apart. It is more than a collection of narratives; it is a science, "the science of man in his political character." The historical student, then, cannot afford to be indifferent to any part of the record of man's political being; but as his abilities for study are limited, he will, while reckoning all history to be within his range, have his own special range within which he will master every detail (*Rede Lecture*). Freeman's range included Greek, Roman, and the earlier part of English history, together with some portions of foreign mediæval history, and he had a scholarly though general knowledge of the rest of the history of the European world. He regarded the abiding life of Rome as "the central truth of European history," the bond of its unity, and he undertook his *History of Sicily* (1891–94) partly because it illustrated this unity. . . . . . .

The Monroe Doctrine

WHAT is the Monroe Doctrine? A pronouncement first made by President Monroe in 1823, it has for nearly a century been in a transition stage. Never having been formulated as law or in exact language, it has meant different things to different Presidents, but it has always been considered vital by the people of America. Its political importance is great, as it may some day afford a cause of international war. The article on the subject in the Tenth Edition should be read by every one.

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THE DOYEN OF HISTORIANS.

From the biographical Article on

Mommsen.— . . . . . During these forty years he found time to write two larger works, the *History of the Roman Coinage* and the *Römisches Staatsrecht*, a profound analysis of Roman constitutional law. His *Roman Provinces* already mentioned gives a singularly interesting picture of certain aspects of social life under the Empire. His smaller papers amount to many hundreds in number, and there is no department of Roman life and learning, from the earliest records of the Roman law to the time of Jornandes, which he has not illuminated. Nor did this exhaust his activity. He has himself realized the ideal of a scholar which was in his mind when he said, "Each one must specialize in one branch of learning, but not shut himself up in it. How miserable and small is the world in the eyes of the man who sees in it only Greek and Latin authors or mathematical problems!" As secretary to the Berlin Academy for over twenty years he took a leading part in their deliberations, and was their spokesman on great occasions. His interest in political problems of the present was as keen as in those of the past. He was one of the founders of the *Preussische Jahrbücher*, the most influential of German political periodicals. For many years he was a member of the Prussian Parliament. His political opinions were strong but ill-regulated. Intensely nationalist, he acquiesced in the annexation of his native land to Prussia, and in a public letter to the Italian nation in 1870 defended the German cause before the nation which had become to him a second fatherland; but he was of too independent a character ever to be quite at ease under Prussian government. Loving liberty, he hated its consequences; a democrat, he had and always expressed a profound contempt for the mob. Like many idealists, he was a severe critic of the faults of his own and other countries, and he added something to the increasing Chauvinism in Germany. He was one of the few men in high position who always refused to bow the knee to Bismarck. A member of the Freisinnige party, he was even brought to trial in 1880 because in an election address he had used the expression "Politik von Schwindel" of the Government. . . . .

TWENTY YEARS SPENT ON A FRAGMENT OF HISTORY.

From the biographical Article on

Gardiner.— . . . . . On constitutional matters he writes with an insight to be attained only by the study of political philosophy, discussing in a masterly fashion the dreams of idealists and the schemes of government proposed by statesmen. Throughout his work he gives a prominent place to everything which illustrates human progress in moral and religious as well as political conceptions, and specially to the rise and development of the idea of religious toleration, finding his authorities not only in the words and actions of men of mark, but in the writings of more or less obscure pamphleteers, whose essays indicate currents in the tide of public opinion. His record of the relations between England and other States proves his thorough knowledge of contemporary European history, and is rendered specially valuable by his researches among manuscript sources which have enabled him to expound for the first time some intricate pieces of diplomacy.

Gardiner's work is long and minute; the fifty-seven years which it covers are a period of exceptional importance in many directions, and the actions and characters of the principal persons in it demand careful analysis. He is perhaps apt to attach an exaggerated importance to some of the authorities which he was the first to bring to light, to see a general tendency in what may only be the expression of an individual eccentricity, to rely too much on ambassadors' reports which may have been written for some special end, to enter too fully into the details of diplomatic correspondence. . . . .

[*The Tenth Edition contains the lives of* GIBBON, HALLAM, MACAULAY, RANKE, FROUDE, LECKY.]

A FALLEN PRESIDENT.

From the Life of

Kruger.— . . . . . From this time forward Mr Kruger's life is so intimately bound up with the history of his country, and even in later years of South Africa, that a study of that history is essential to an understanding of it (see TRANSVAAL and SOUTH AFRICA). The years which followed the abortive invasion of the Free State in 1857 were years of continual unrest and faction strife in the Transvaal. In this strife Mr Kruger played a leading part, and showed very little scruple or broad patriotism so long as his party might prevail. In 1864, when Pretorius was president, Kruger was elected commandant-general of the forces of the Transvaal. In 1871 a boundary dispute arose with the British Government, which was settled by the Keate award. The decision caused so much discontent in the Transvaal that it brought about the downfall of President Pretorius and his party; and Burgers, an educated Dutch minister, resident in Cape Colony, was elected to succeed him. During the term of Burgers's Presidency, which terminated with the British annexation in 1877, Kruger appeared to great disadvantage. Instead of loyally supporting the President in the difficult task of reducing chaos to order, and establishing some sort of civilized government in the Transvaal, he did everything in his power to undermine his authority, even going so far as to urge the Boers to pay no taxes while Burgers was in office. In fact, there is no question that the faction of which he was a prominent member was chiefly responsible for bringing about that *impasse* in the government of the country which drew such bitter protest from Burgers and terminated in the annexation by the British in 1877. At this period of Transvaal history it is impossible to trace any true patriotism in the action of the majority of the inhabitants. The one idea of Kruger and his faction was to oust Burgers from office on any pretext, and, if possible, to put Kruger in his place. When the downfall of Burgers was assured and annexation offered itself as the alternative resulting from his downfall, it is true that Mr Kruger opposed it. But matters had gone too far. Annexation became an accomplished fact, and Mr Kruger accepted paid office under the British Government. He continued, however, so openly to agitate for the retrocession of the country, accompanying two deputations to England, that Sir Theophilus Shepstone, the British administrator, dismissed him from his service. . . . .

A MARTYRED RULER.

From the biographical Article on

McKinley.— . . . . . As commander-in-chief of the army and navy of the United States, Mr McKinley prosecuted a brief but vigorous war in which a volunteer army of nearly a quarter of a million men was called into existence, and two Spanish fleets were destroyed—one by

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See the extract on p. 118 from the interesting review of modern French Literature.

the Asiatic squadron under Admiral Dewey in Manila Harbour, the other by the North Atlantic squadron under Admiral Sampson near the harbour of Santiago de Cuba. These victories at sea, together with the surrender to an American expeditionary force of the city of Santiago, in eastern Cuba, led to the signing of a peace protocol on 12th August, which was followed by the signature at Paris on 10th December of articles of peace. After a long discussion the peace treaty was ratified by the United States Senate, 6th February 1899; and in accordance with its terms Porto Rico, the Philippine Archipelago, and a portion of the Ladrone Islands were transferred by Spain to the sovereignty of the United States, while Cuba came under American jurisdiction pending the establishment there of an independent government. Two days before the ratification of the peace treaty, a conflict took place between armed Filipinos under the leadership of Emilio Aguinaldo and the American forces that were in possession of Manila. The six months that had elapsed between the signing of the peace protocol and the ratification of the treaty had constituted a period of virtual interregnum, Spain's authority having been practically destroyed in the Philippines and that of the United States not having begun. In this period a formidable native Filipino army had been organized and a provisional government created. The warfare waged by these Filipinos against the United States, while having for the most part a desultory and guerilla character, was of a very protracted and difficult nature. Sovereignty over the Filipinos having been accepted by virtue of the ratification of the Paris treaty, President McKinley was not at liberty to do otherwise than assert the authority of the United States and use every endeavour to suppress the insurrection. There was, however, a wide difference of opinion in the United States whether or not it had been wise to accept responsibility for so distant a territorial possession. In the foreign relations of the United States, as directed by President McKinley, the most significant change was the cordial understanding established with the British Government. Under no previous American administration since the establishment of Independence had the relations between the two Governments been so free from difficulty or embarrassment. . . . . .

[*President GARFIELD, the late Ameer of AFGHANISTAN, MENELEK II. of Abyssinia, and all the Rulers of the world, past or present, have biographical notices.*]

THE CHAMPION OF TRUTH.

From the biographical Article on

Emile Zola.— . . . . . . Zola played a very important part in the Dreyfus affair, which convulsed French politics and social life at the end of the 19th century. At an early stage he came to the conclusion that Dreyfus was the innocent victim of a nefarious conspiracy, and on the 13th January 1898, with his usual intrepidity, he published in the *Aurore* newspaper, in the form of a letter beginning with the words *J'accuse*, a terrible denunciation of all those who had had a hand in hounding down that unfortunate officer. Zola's object was a prosecution for libel, and a judicial inquiry into the whole *affaire*, and at the trial, which took place in Paris in February, though the court used every effort to circumscribe the field of investigation, a fierce flood of light was thrown on the case. The chiefs of the army put forth all their power, and Zola was condemned. He appealed. On the 2nd April the Cour de Cassation quashed the proceedings. A second trial took place at Versailles, on the 18th July, and without waiting the result Zola, by the advice of his counsel and friends, and for reasons of legal strategy, abruptly left France and took refuge in England. Here he remained in hiding, writing *Fécondité*, till the 4th June 1899, when, immediately on hearing that there was to be a revision of the first Dreyfus trial, he returned to Paris. Whatever may be thought of the *affaire* itself, there can be no question of Zola's superb courage and disinterestedness.

On the morning of the 29th of September 1902 Zola was found dead in the bedroom of his Paris house, having been accidentally asphyxiated by the fumes from a defective flue. This sudden and tragical death caused a great sensation. He received a public funeral, at which Captain Dreyfus was present, but no serious public disturbance occurred. M. Anatole France delivered an impassioned oration at the grave. At the time of his death Zola had just completed a novel, *Verité*, dealing with the incidents of the Dreyfus trial. A sequel, *Justice*, had been planned, but not executed. After a life of constant struggle and an obloquy which never relaxed, the sensational close of Zola's career was the signal for an extraordinary burst of eulogy.

[*VICTOR HUGO, MAURUS JOKAI, A. DAUDET, OCTAVE FEUILLET, IBSEN, and many other foreign novelists and authors figure in the biography of the Tenth Edition.*]

Gathered almost at random from the mass of biographical articles in the *Encyclopædia Britannica*, the above extracts cannot fail to have proved to you how comprehensive a survey of the lives of the great in the World's History the Tenth Edition affords. And remember that every branch of science, of the arts, of literature, every speciality by which the subjects of these biographies have become great, is treated at length in its pages. Music, drama, philosophy, poetry, physiology, each have many articles devoted to them.

The power of Biography to hold the attention of many a reader to whom a less personal form of historical narrative is repugnant has long been proved. It is often by following a man closely through an intricate series of situations that we acquire a living interest and so a practical understanding of those situations themselves. From a conception of the man to a conception of the situation is an easier and more natural process for us than from the situation to the man. In every region of thought we have passed from an attitude of general study to one of specific investigation. More is to be learned from a proper perception of what passed through the mind of a single French peasant at a single moment in the great Revolution than from the most perfect list of all the dates and all the provisions of the successive governments which followed one another with bewildering rapidity and almost matchless inconsequence during that incredible epoch.

The biographical side of the *Encyclopædia Britannica*, as may be guessed from the few passages extracted from its innumerable biographical articles, constitutes an inexhaustible narrative embracing all the careers of all the men and women who have made and unmade empires of thought as well as of government.

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The first thought which comes to any one who is familiar with the contents of the Encyclopædia Britannica, as the long list of biographical articles is scanned, is that the names of not a few contributors to its pages appear as the titles of biographical articles in the great library of reference. This fact in itself is perhaps the most eloquent tribute to the merits of the work. The standard of authorship demanded by the Encyclopædia Britannica has remained, through the century and a half of its existence, so high that it has necessarily attracted to its compilation those giants of literature and science whose greatness has at once ensured their invitation to contribute to its editions, and their being subsequently honoured by inclusion in the Biographical Section of the National Library of Reference.

In the life of Professor Max Müller we have an absorbing narrative of the career of a man whose work for the Encyclopædia Britannica is recognized as at least equal to the best of the marvellous collection of essays which have done so much to mould the science of language. Prof. Rawson Gardiner is another of the contributors of whom a life is included in the volumes, and his unmatched knowledge of the period of the great Civil War of the 17th century enriches the Encyclopædia Britannica with some of the most authoritative treatises upon that stirring period of English history.

In the province of imaginative literature, too, the names of the contributors are worthy of the task allotted them. Mr W. M. ROSSETTI *writes on "SHELLEY." As one glances at this name one is struck by the thought of what an immense number of important biographical articles are to be found under the letter "S"—Matthew Arnold's "SAINT-BEUVE," Mr George Saintsbury's "SAINT-SIMON," Mr Platt's "SAPPHO," W. M. Rossetti's "SARTO," Madame Villari's "SAVONAROLA," Mr Richard Christie's "SCALIGER," Prof. Minto's "WALTER SCOTT," Mr J. Beavington Atkins' "SCHADOW," Mr James Sime's "SCHILLER," Prof. Wallace's "SCHOPENHAUER"; the article on "SCHLIEMANN" by Mr George Hogarth, whose own excavations are only second in interest to those of Schliemann himself; Mr Brodribb's "SCIPIO," Sir E. Fry's life of LORD SELBORNE, the late Prof. Middleton's "SELINAS," Mr Hicks' "SENECA," the Rev. Alex. Gordon's "SERVETUS," Dr Reid's "SEVERUS"; the lives of the Earls of SHAFTESBURY by Mr Osmond Airy and the Rev. Thomas Fowler, the article on "SHAKESPEARE" by Mr T. Spencer Baynes, which is universally conceded to be one of the clearest summaries of a voluminous and often perplexing page of biographical literature; Mr Airy's "ALGERNON SIDNEY"; the lives of SYDNEY SMITH, of SMOLLETT, of SOCRATES, of SOLON, of SOPHOCLES; Sir Fred. Pollock's article upon Sir J. F. STEPHEN; the life of ROBERT LOUIS STEVENSON by Mr Edmund Gosse, who has with singular clearness of judgment avoided the excesses of some among Stevenson's admirers, while he has not permitted any sense of impatience at their lack of discretion to abate his own appreciation of Stevenson's qualities as a writer; Prof. Rawson Gardiner's "LIFE OF STRAFFORD"; the lives of SWEDENBORG, SWIFT, and SYDENHAM —these are a few only of the biographical articles beginning with the letter "S," and one cannot consider the authors of these contributions in connexion with their subject-matter without gaining a very clear impression of the brilliant quality of the biographical articles for which they are responsible. Let us now look at a few of the names beginning with T.*

TAAFFE, Tacitus, Taine, Tait, Talbots, Talleyrand, Tassie, Tasso, Tatian, Taylor (Jeremy), Taylor (Sir Henry), Tchernaieff, Tell, Temple (Sir William), Temple (Sir Richard), Temple (Archbishop), Teniers, Tenniel, Tennyson, Terence, Tertullian, Tewfik (Mohammed), Thackeray, Thales, Themistocles, Thénard, Theocritus, Theodora, Theodoric, Theodosius, Theresa, Theseus, Thibaut, Thiers, Thirlwall, Thomas (General George H.), Thompson (Sir Benjamin), Thompson (Sir Henry), Thompson (James), Thoreau, Thring (Edward), Thucydides, Thurlow, Tiberius, Tibullus, Tichborne Claimant, Tieck, Tietjens, Timur, Tissot, Titian, Tolstoi, Tooke, Toole.

Alphabetical lists of the names to which articles have been devoted might be continued ad infinitum. *A more interesting list is afforded by a search for names in the groups in which they will naturally occur to us. Thus:*

METTERNICH, JOUBERT, BEACONSFIELD, MAZZINI, MONROE, WALPOLE, O'CONNELL, ZORILLA, GAMBETTA, GLADSTONE, RICHELIEU, MACHIAVELLI, CHATHAM, BURKE, CAVOUR, PITT, PEEL, PALMERSTON, CANNING, MAZARIN, BOLINGBROKE, MIRABEAU. &c., &c.

ALEXANDER THE GREAT, NAPOLEON, TRAJAN, FREDERICK THE GREAT, HENRY VIII., AUGUSTUS, LOUIS XIV., VICTORIA, HENRY V., EDWARD III., CHARLES V., FRANCIS I., ELIZABETH, PHILIP II., DARIUS, LOUIS XV., PETER THE GREAT, CÆSAR, IVAN THE TERRIBLE.

FLORENCE NIGHTINGALE, HANNAH MORE, LADY JANE GREY, MARY OF BURGUNDY, CORNELIA, MARGARET OF SCOTLAND, PRINCESS ALICE OF HESSE, WILHELMINA, SAINT THERESA, SAINT CLOTILDA, BARONESS BURDETT COUTTS, QUEEN CAROLINE, ESTHER, HYPATIA, OCTAVIA.

LUCREZIA BORGIA, BEATRICE CENCI, CATHARINE OF RUSSIA, ELIZABETH OF RUSSIA, SEMIRAMIS, CLEOPATRA, LADY HAMILTON, MADAME DE POMPADOUR, NINON DE L'ENCLOS, JANE SHORE, FAUSTINA, CATHERINE DE MEDICI, MARGARET OF ANJOU, THEODORA, AGRIPPINA (WIFE OF CLAUDIAN).

The Tenth Edition contains such an exhaustive list of biographical narratives that all attempt to measure the interest of this side of the work must be made with the volumes themselves.

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GEOGRAPHY

It was a thousand years after the fall of Rome that the greatest of geographical discoveries was founded on the astronomical discovery that the earth was a sphere.—MANSFIELD.

GEOGRAPHY is not merely a dull compilation of dry facts concerning distances, of export and import statistics, and of latitudes and longitudes: it embraces the whole poetry of earth, as indeed its etymology suggests. The period covered by the ten editions of the Encyclopædia Britannica has been a momentous one in regard to the mapping-out of the world, and with the extension—almost to its limit—of territorial discovery has come a more comprehensive range of activity and research for the geographer. To-day he is concerned with all the problems of geological variation, with terrestrial magnetism, currents, tides, ocean survey, with the difficulties of submarine communications, and indirectly with the political grouping of peoples. In the sixteenth century exploration was the province of the merchant adventurer, but to-day the explorer is inspired by the romance of pure science. McClure, Franklin, Parry, Nares, Livingstone, Stanley, Speke, and Cameron, whose records are but a few among the many contained in the Encyclopædia Britannica, are names eloquent of the service done to the higher aims of geography in the Victorian Era.

Side by side with the accurate exposition of scientific facts to the establishment of which these men have contributed, will be found in the pages of the Tenth Edition the thrilling stories of adventure which make up the lives of Nineteenth Century explorers.

The wealth of general geographical information in the Encyclopædia Britannica can only be gathered at leisure from the pages of the work itself, but the subjoined extracts will show the reader that not only does the Tenth Edition contain the most modern geographical knowledge, but in a great variety of articles the subjects have been treated by men who have given their lives to the study of those portions of the globe of which they write. Nansen and Sir Clements R. Markham tell us of their own explorations in the Arctic and Polar Regions; Sir H. H. Johnston, K.C.M.G., and Sir Frederick Lugard, High Commissioner of Nigeria, unfold for us the wonders of the Dark Continent. These are but two of the many illustrations that might be given to show that the Encyclopædia Britannica cannot be excelled in accuracy and completeness as a library of geographical reference.

PREHISTORIC VILLAGES.

From the Article by JOSEPH ANDERSON, LL.D., Secretary of Scottish Society of Antiquaries.

Lake Dwellings.— . . . . . The archæological researches of the past few years have shown that such artificial constructions in lakes were used as defensive dwellings by the Celtic people of post-Roman and mediæval times (see CRANNOGS). Similar researches on the Continent have also established the fact that in pre-historic times nearly all the shallow lakes of Switzerland, and many in the adjoining countries—in Savoy and the north of Italy, in Austria and Hungary, and in Mecklenburg and Pomerania—were peopled, so to speak, by lake-dwelling communities, living in villages constructed on platforms supported by piles at varying distances from the shores. . . . .

The character of the relics associated with the sites of the various settlements discloses the fact that in some cases they have been the dwellings of a people using no materials but stone, bone, and wood for their implements, ornaments, and weapons; in others, of a people using bronze as well as stone and bone; and in others again iron and bronze were used. But, though the character of the associated relics is thus changed, there is no corresponding change in the construction and arrangements of the dwellings. The settlement in the Lake of Moosseedorf, near Bern, affords the most perfect example of a lake dwelling of the Stone age. It was a parallelogram 70 feet long by 50 feet wide, supported on piles, and having a gangway built on faggots connecting it with the land. The superstructure had been destroyed by fire. The implements found in the relic bed under it were celts or axe-heads of stone, with their haftings of stag's-horn and wood; a flint saw, set in a handle of fir wood and fastened with asphalt; flint flakes and arrow-heads; harpoons of stag's-horn with barbs; awls, needles, chisels, fish-hooks, and other implements of bone; a comb of yew wood 5 inches long; and a skate made out of the leg bone of a horse. The pottery consisted chiefly of roughly-made vessels, some of which were of large size, others had holes under the rims for suspension, and many were covered with an encrustation of soot, the result of their use as culinary vessels. Burnt wheat, barley, and linseed, with many varieties of seeds and fruits, were plentifully mingled with the bones of the stag, the ox, the swine, the sheep, and the goat, representing the ordinary food of the inhabitants; while remains of the beaver, the fox, the hare, the dog, the bear, the horse, the elk, and the bison were also found. . . . .

[*Prehistoric geography is treated at length in the Tenth Edition under such headings as* CAVES, GEOLOGY, PALÆONTOLOGY, MYCENÆAN CIVILIZATION, EGYPTOLOGY, ASSYRIOLOGY, BABYLONIA, PERU, POLYNESIA, *&c.*]

FIFTEENTH-CENTURY ADVENTURERS.

From the Article (37 pages) by Sir CLEMENTS ROBERT MARKHAM, K.C.B., F.R.S., F.R.G.S.

Geography.— . . . . . . In mentioning Varthema we have anticipated events; but in the 15th century the time was approaching when the discovery of the Cape of Good Hope was almost indefinitely to widen the scope of geographical enterprise. The great event was preceded by the discovery of the polarity of the magnetic needle, and the consequent construction of the mariner's compass. This most important discovery appears to have been made in China, and it is uncertain when the compass was first used by Western nations. Its introduction has been attributed to Flavio Gioia, a citizen of Amalfi, in the kingdom of Naples, about the year 1307. Encouraged by the possession of this sure guide, by which at all times and in all places he could with certainty steer his course, the navigator gradually abandoned the method of sailing along the shore, and boldly committed his bark to the open sea. . . . . Portugal took the lead in this new and brilliant path, and foremost in the front rank of the

Mariner's compass.

For the titles of a few of the articles on Science, see p. 213 of this pamphlet.

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For the titles of some of the articles on Colonial matters, see p. 85.

worthies of this little hero-nation stands the figure of Prince Henry the Navigator.

Prince Henry the Navigator.

The work of Prince Henry is well defined by his biographer, Mr Major. Until his day the pathways of the human race had been the mountain, the river, and the plain, the strait, the lake, and the inland sea. It was he who first conceived the thought of opening a road through the unexplored ocean,—a road replete with danger but abundant in promise. Born on March 4, 1394, Prince Henry was a younger son of King João of Portugal and of Philippa of Lancaster, the grandchild of Edward III.; so that he was half an Englishman. Prince Henry relinquished the pleasures of the court, and took up his abode on the inhospitable promontory of Sagres, at the extreme south-western angle of Europe. To find the sea-path to the "thesauris Arabum et divitis Indiæ" was the object to which he devoted his life. He collected the information supplied by ancient geographers, unweariedly devoted himself to the study of navigation and cartography, and invited, with princely liberality of reward, the co-operation of the boldest and most skilful navigators of every country. The prince's motto was "Talent de bien faire,"—the word "talent," in those days, conveying not the idea of power or faculty, but of desire. Having acquired military renown by the capture of Ceuta in 1415, he set his mind upon the conquest of Guinea, and sent every year two or three vessels to examine the coasts beyond Cape Nun, which was then the limit of exploration. Yet none of his ships for many years had the hardihood to round Cape Bojador.

The first fruit of Prince Henry's explorations was the rediscovery of Madeira and Porto Santo, in 1418 and 1420. The truth of the romantic story of the first discovery of Madeira by two English lovers named Robert Machim and Anna d'Arfet, in the time of Edward III., has been demonstrated by Mr Major. Madeira and Porto Santo were granted to Prince Henry by his brother, King Duarte, in 1433. In the same year one of the prince's ships, commanded by Gil Eannes, at length doubled Cape Bojador. In 1435 Affonso Gonsalves Baldaya, the prince's cup-bearer, passed 50 leagues beyond the cape; and eight years afterwards Nuño Tristam got to a point 25 miles beyond Cape Blanco. But it was not until 1445 that the mouth of the Senegal was reached by Diniz Dias; and in those days the Portuguese gave the name of Guinea to the country commencing at Cape Nun. In 1481 the king of Portugal assumed the title of lord of Guinea. Up to 1446 there had been 51 caravels to the Guinea coast, and almost every year some new advance was made. Meanwhile the Canaries and Azores were brought within the realms of Spain and Portugal. In 1402 a Norman named Jean de Bethencourt, accompanied by Gadifer de la Salle, had landed on the island of Lancarote, and with reinforcements from Spain he subjugated Forteventura and Ferro, and received the sovereignty of the Canaries from the king of Castile. But he returned to his lands in Normandy in 1406, and died there in 1425. Gomera, Palma, Teneriffe, and the Great Canary were still unconquered. Prince Henry made several attempts to establish Portuguese rule on these islands; the right was long disputed with Spain; and it was not until 1479 that the treaty of Alcacora provided for the concession of the sovereignty of the Canaries to Spain. Prince Henry, however, successfully colonized the Azores, and in 1444 St Michael's was discovered, the settlement of the other islands following soon afterwards.

In 1455 an important expedition was despatched by Prince Henry, under the command of a young Venetian adventurer named Alvise Cadamosto. Touching at Madeira and the Canaries, Cadamosto made his way to Cape Blanco on the African coast, and thence to Senegal and the Gambia. He returned with a full report of all he had seen, and in the following year he again sailed from Lagos direct for Cape Blanco, with three ships, and discovered the mouth of a river which he named the Rio Grande (Jeba?). In 1457 Diogo Gomez sailed with orders to proceed as far as he could, and made his way to the Gambia. The Cape Verd Islands were discovered and colonized about 1462.

Prince Henry the Navigator died on the 13th of November 1460, and was buried near his father and mother in the monastery of Batalha. In 1839 a monument to his memory was erected at Sagres. During the long period in which the prince was continuing his maritime explorations, he did not cease to cultivate the science of cartography. The geographer Jayme of Majorca superintended his school of navigation at Sagres, and at the prince's instance the finest specimen of mediæval map-making that has been preserved was prepared at Venice under the superintendence of Fra Mauro of the Camaldolese convent of San Miguel de Marano. The geographical knowledge of the 15th century is also shown by the famous Borgia map (see Plate II.), a bronze planisphere which came into the possession of Cardinal Borgia about 1794, and was published in 1797 by the cardinal's nephew. The Borgia map, however, is of the very beginning of the 15th century. . . . . .

[*For the history of ancient and modern Polar Exploration, see* Polar Regions (*24 pages*), *by* Sir CLEMENTS MARKHAM *and* FRIDTJOF NANSEN.]

SEAS AND OCEANS DEFINED.

From the Article (*8 pages*) *by* H. R. MILL, *D.Sc., F.R.G.S.*

Oceanography.— . . . . From the time of the first circumnavigators three great oceans running from north to south have been recognized—the Atlantic, between Europe-Africa and America; the Indian, between Africa and Malaysia-Australia; and the Pacific or South Sea, between Asia-Malaysia-Australia and America. The extent and limits of the oceans to north and south were variously given by different writers, and much confusion resulted. The question of nomenclature was considered by the Royal Geographical Society in 1845, when a committee drew up provisional rules which were never formally adopted, but nevertheless came into current use. They recognized an Arctic and Antarctic Ocean lying wholly within the respective polar circles, and the water area between the north and the south polar circles was divided into the Atlantic, Pacific, and Indian Oceans by the continental coasts and arbitrary meridians. The advance in physical knowledge of the oceans has shown it to be desirable to recognize the great ring of unobstructed water girdling the southern hemisphere, south of the continents, as a natural unit, and it has accordingly become common, if not yet usual, to place the limits of the Atlantic, Indian, and Pacific Oceans at 40° S., and to call all the water south of that parallel the Southern Ocean. The Southern Ocean may be considered to stretch to the edge of the Antarctic ice, or, if preferred, the southern portion, within the Antarctic circle, may retain its old name. From several points of view it is advisable to call the Arctic Ocean a sea, and to view it as an extension of the Atlantic basin. The chief physical differences between oceans and seas are due to the freedom of the former from the influence of land, which dominates the character and the circulation of the water in the latter.

Historically, it may be noticed that the early Greek antithesis between the Mediterranean Sea surrounded by the habitable land, and the Ocean River surrounding the

For a description of the famous Mammoth Cave, see Vol. 15 of the Tenth Edition.

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known world, gave place gradually to the idea of an Ocean Sea, in which the various continents formed islands or parts of islands, and the term Ocean Sea only went out of use when the three great divisions of Atlantic, Indian, and Pacific Oceans were recognized. The distribution of depth in the ocean was very vaguely known so long as the question was merely one of scientific curiosity, although ingenious apparatus for ascertaining the depth had been devised by Robert Hooke and Stephen Hales in the 17th century, and the use of the lead in shallow water early became habitual with sailors. When the question of laying submarine telegraph cables gave practical importance to a knowledge of the form and temperature of the sea-bed about 1855, the methods of deep-sea sounding and temperature-taking were rapidly improved, and scientific oceanography may be said to date from that period. . .

[This extract touches on but one point of interest in the eight pages devoted to the subject of Oceans.]

SUBMARINE CABLES.

From the Article (21 pages) by OLIVER HEAVISIDE, *F.R.S.*, FRANCIS JACOB, *M.I.E.E., and* J. A. FLEMING, *D.Sc., F.R.S., Professor of Electrical Engineering, University College, London.*

Telegraphy.— . . . . . The system of submarine cables originated in the middle of last century by England has continued to develop in her hands until the world has been covered with a veritable network of cables, which has hitherto done much to prevent the decline of her commercial supremacy, the possession of so comprehensive a system of rapid communication radiating in all directions having assisted in keeping London the centre of the world's trade. During the last years, however, other maritime nations in Europe have begun to realize the importance of submarine cable enterprise in this respect, and France and Germany have made some progress towards freeing themselves from the British monopoly. Both are now connected to America by cables which are owned in their respective countries, though their manufacture and submergence was effected by an English company. This spread of the cable system has naturally followed trade routes, and thus, with the exception of the cables to America, their trend has been eastwards as far as Australia and Japan, and now the circuit of the globe by British-owned cables is on the eve of completion, as the long projected Pacific cable, connecting Vancouver with Australia, in course of manufacture, will be laid before the close of 1902. . . . .

[The whole fascinating story of Marconi's achievements is told in this exhaustively written article of 21 pages.]

DEEP-SEA MYSTERIES.

From the Article (18 pages) by JOHN MURRAY, *Ph.D., LL.D., Director of the Challenger Expedition Office, Edinburgh, and* H. N. DICKSON, *B.Sc., L.R.C.S.*

Pacific Ocean.— . . . . . During the cruise of the "Challenger" the bottom temperature over the North Pacific was found to be 35°·1; south of the Sandwich Islands it fell to 35°; in the Low Archipelago it again rose to 35°·1; on the 40th parallel it fell to 34°·7 in the deep water, but rose to 35°·4 and 35°·5 in the shallow water of the Patagonian elevation. The thermometer registered 34°·5 at the bottom between Australia and New Zealand; while in that part of the ocean to the north-east of Australia known as the Coral Sea, although the depth was the same (about 2500 fathoms), the bottom temperature was as high as 35°·9. The variations of temperature in the enclosed seas of the Eastern Archipelago were found to be considerable, and nearly all those seas show the phenomenon of constant temperature from an intermediate point to the bottom, consequent on the existence of barriers. . . . .

The temperature of the water at the depth of 300 fathoms is nearly the same (40° to 45°) over the whole of the North Pacific, but above 300 fathoms the water is warmer in the western than in the central portion, while below that depth it is colder in the former than in the latter. The same phenomenon is noticed between the latitudes of 34° S. and 40° S., but here 700 fathoms marks the plane of constant temperature. Between 33° N. and 40° S. the temperature of the water above 200 fathoms is higher in the North than in the South Pacific, whilst from 200 to 1500 fathoms it is lower in the North, and below the latter depth the condition reverts to what it was above 200 fathoms.

Plate II. fig. 2.

The diagram (Plate II. fig. 2) exhibits the bathymetrical distribution of temperature in a section of the Pacific from a position in 38° 9′ N. lat. and 156° 25′ W. long. to one in 40° 3′ S. lat. and 132° 58′ W. long. as determined by H.M.S. "Challenger" in 1875, and may be compared with similar diagrams of the ATLANTIC (see vol. iii. p. 23). In order to separate the isothermals in the first 200 fathoms sufficiently the scale of depths required to be made large, while in order that the length of the diagram might be kept within reasonable bounds the scale of latitude was made very much smaller. The result of this is to exaggerate the inequalities of the sea bottom, making the slopes very much steeper than they are; this effect is best seen in the way in which islands are represented. The rapid falling off of temperature in the first few hundred fathoms, and then its very slow but steady decrease to the bottom are to be observed, and the fact that latitude has a great effect on the surface temperature, but none at considerable depths, for the isotherm of 40° is constantly between 300 and 400 fathoms, and also that depth alone determines the bottom temperature in the open ocean, the coldest water occurring as a matter of fact under the equator in the deepest troughs open to the south.

Density of the water.

Density of the Water.—The specific gravity of ocean water is an index of its salinity, since the researches of various chemists, foremost amongst whom are Forchhammer and Dittmar, have shown conclusively that the percentage composition of the salts in sea water is the same in all parts of the ocean, so far at least as regards the principal constituents. Mr J. Y. Buchanan made continuous observations on the specific gravity of sea water during the whole voyage of the "Challenger," and has published a very valuable paper on the distribution of salt in the ocean in the "Challenger" Reports (*Phys. Chem. Chall. Exp.*, vol. i. part ii.). . . . .

Circulation.

The surface currents of the Pacific (Fig. 4) have not been studied in the same detail as those of the Atlantic, and their seasonal variations are little known except in the monsoon regions. Speaking generally, however, it may be said that they are for the most part under the direct control of the prevailing winds. The *North Equatorial Current* is due to the action of the north-east trades. It splits into two parts east of the Philippines, one division flowing northwards as the *Kuro Siwo* or Black Stream, the analogue of the Gulf Stream, to feed a drift circulation which follows the winds of the north Pacific, and finally forms the *Californian Current* flowing southwards along the American coast. Part of this rejoins the North Equatorial Current, and part probably forms the variable *Mexican Current*, which follows the coasts of Mexico and California close to the land. The *Equatorial Counter-Current* flowing eastwards is largely assisted during the latter half of the year by the south-west monsoon, and from July to October the south-west winds prevailing east of 150° E. further

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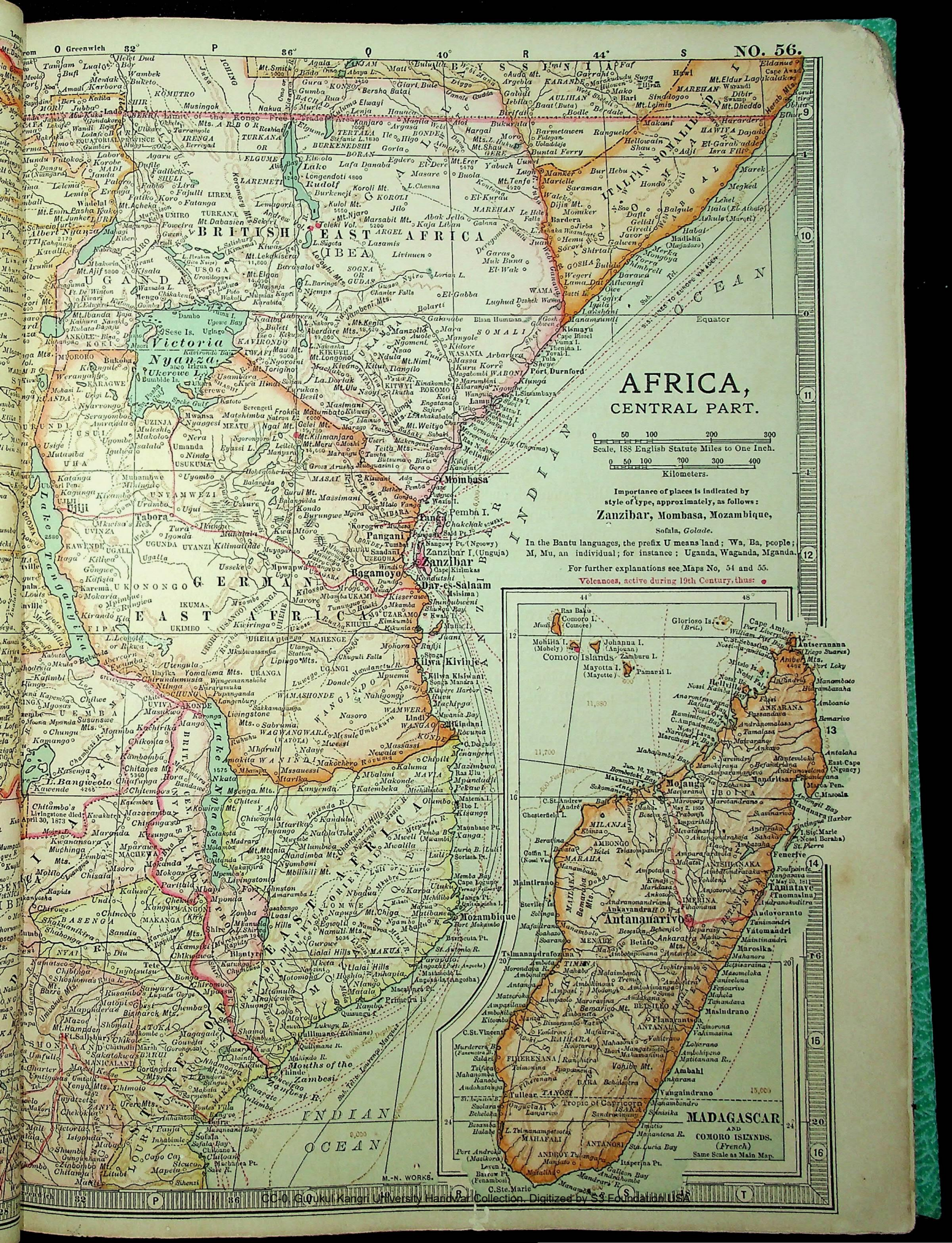
Compared with the rough, picturesque treatment of the whole continent of Africa in this map from the First Edition, the minute accuracy and completeness of the portion known as "Central Africa" on the following page are an eloquent testimony both to the progress in Cartography and the scientific advance which mark the period between the First and the Tenth Editions of the Encyclopædia Britannica.

Plate XC.

Facsimile of the copperplate Map of Africa in the article Geography, First Edition of the Encyclopædia Britannica, first part published 1768.

Of Africa it is stated that

> "the prevailing religions here, are Mahometanifm and Paganifm: Chriftianity only takes place among the Abyffinians and European fettlements. The government in Africa is in general defpotic, and the inhabitants black."

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The History of a Great Book

"A SOCIETY OF GENTLEMEN IN SCOTLAND" wrote the First Edition of the *Encyclopædia Britannica*, which was completed in 1771. Facsimiles of some illustrations more than a century old will be found reproduced on pages 169, 172, and 185 of this pamphlet, and as the reader glances at them he cannot fail to be impressed by the astounding vitality of a book which, first published when the world's beliefs and tastes so greatly differed from ours, should, accommodating itself to the march of progress, have maintained its position until now. This First Edition contained 2670 pages; the Second Edition, in 8595 pages, was issued in 1784; the Third, 14,579 pages, in 1797; the Supplement to the Third Edition, 1600 pages, in 1801; the Fourth, 16,033 pages, in 1810; the Fifth, 16,017 pages, in 1817; the Supplement to the Fifth Edition, 4933 pages, in 1820; the Sixth Edition, 16,017 pages, in 1823; the Seventh, 17,011 pages, in 1842; the Eighth, 17,957 pages, in 1861. The first volume of the Ninth Edition was published in 1875 and the twenty-fourth in 1888. The Tenth Edition, of which the last volume is dated December 1902, is an enlargement of the Ninth Edition, and of its thirty-five volumes the first twenty-four are identical with those of the Ninth. It contains about 30,000 pages, 26,000 articles by 2000 contributors, 614 Plates and Maps, and 11,400 other Illustrations. The Tenth Edition has, moreover, the great advantage of having attached to it in Vol. 35 an Index which, with entries amounting to upwards of half a million, is far the largest Index ever attempted in connexion with a work of this kind. For specimen pages of this Index the reader should turn to pages 164 and 165 of this review.

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strengthen the current, but later in the year the easterly winds weaken or even destroy it. The *South Equatorial Current* is produced by the south-east trades, and is more vigorous than its northern counterpart. On reaching the western Pacific part of this current passes southwards, east of New Zealand, and again
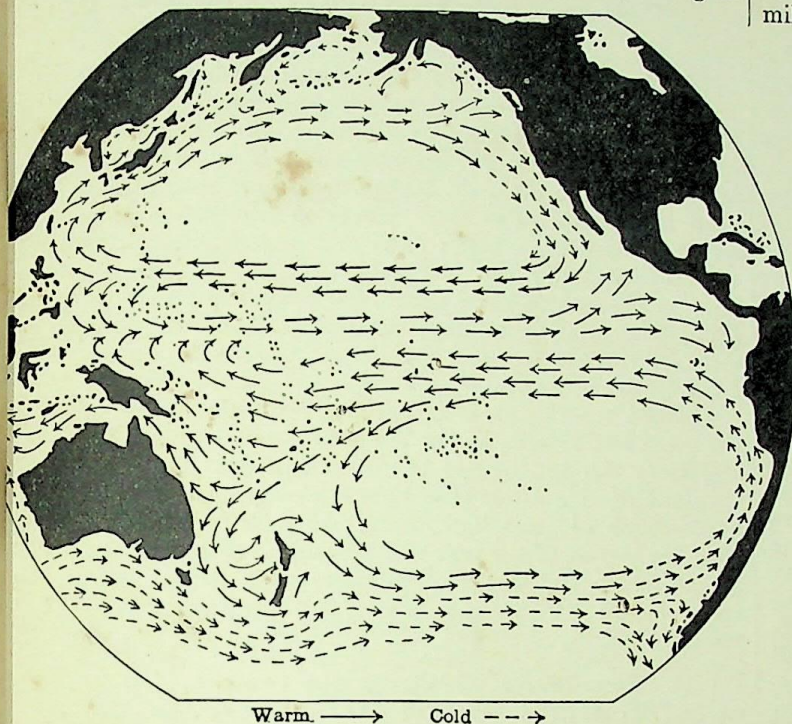
FIG. 4.—Chart of the Currents of the Pacific.

east of Australia, as the *East Australian Current*, part northwards to join the Equatorial Counter-Current, and during the north-east monsoon part makes its way through the China Sea towards the Indian Ocean. During the south-west monsoon this last branch is reversed, and the surface waters of the China Sea probably unite with the Kuro Siwo. Between the Kuro Siwo and the Asiatic coast a band of cold water, with a slight movement to the southward, known as the *Oya Siwo*, forms the analogue of the "Cold Wall" of the Atlantic. In the higher latitudes of the south Pacific the surface movement forms part of the west wind-drift of the Roaring Forties. On the west coast of South America the cold waters of the *Humboldt* or *Peruvian Current*, corresponding to the Benguela Current of the South Atlantic, make their way northwards, ultimately joining the South Equatorial Current. The surface circulation of the Pacific is, on the whole, less active than that of the Atlantic. The centres of the rotational movement are marked by "Sargasso Seas" in the north and south basins, but they are of small extent compared with the Sargasso Sea of the north Atlantic. From the known peculiarities of the distribution of temperature, it is probable that definite circulation of water is in the Pacific confined to levels very near the surface, except in the region of the Kuro Siwo, and possibly also in parts of the Peruvian Current. . . .

[*There are also Articles on the* ATLANTIC OCEAN, *the* BLACK SEA, *the* BALTIC, *the* DEAD SEA, CONGO, MISSISSIPPI, MISSOURI, *&c., &c.*].

THE SPIRIT OF EXPLORATION.

From the Article (16 pages) by HUGH ROBERT MILL, *D.Sc., F.R.G.S., Librarian of the Royal Geographical Society 1892–1900, Editor of "The International Geography."*

Geography.— . . . . . . The old arguments of Aristotle and the old measurements of Ptolemy were used by Toscanelli and Columbus in urging a westward voyage to India; and mainly on this account did the crossing of the Atlantic rank higher in the history of scientific geography than the laborious feeling out of the coast line of Africa. But not until the voyage of Magellan shook the scales from the eyes of Europe did modern geography begin to advance. Discovery had outrun theory; the rush of new facts made Ptolemy practically obsolete in a generation, after having been the fount and origin of all geography for a millennium.

Revival of geography.

. . . .

PROGRESS OF GEOGRAPHICAL DISCOVERY.

The last quarter of the 19th century witnessed no abatement of the spirit of exploration, almost all the remoter parts of the less known continents having been sought out and investigated. The marked lead taken by British explorers in the first part of the century has not been maintained; for many travellers from Germany, France, the United States, Italy, Austria-Hungary, Russia, and the Scandinavian countries have shared in the triumphs of discovery. The character of the explorations also has largely altered; the work has become more scientific, the surveys more exact, and the collections more systematic. The action of the Royal Geographical Society in supplying practical instruction to intending travellers, in astronomy, surveying, and the various branches of science useful to collectors, has had much to do with bringing about this change. The great development of photography has also been a notable aid, by placing at the disposal of travellers a faithful and ready means of recording the features of a country and the types of inhabitants.

Recent exploration.

. . . .

If the continuous, unbroken, horizontal extent of land in a continent is termed its *trunk*, and the portions cut up by inlets or channels of the sea into islands and peninsulas the *limbs*, it is possible to compare the continents in an instructive manner.

The following table is from the statistics of Professor H. Wagner, his metric measurements being transposed into British units:—

COMPARISON OF THE CONTINENTS.

	Area (total) mil. sq. m.	Mean height, feet.	Area trunk, mil. sq. m.	Area peninsulas, mil. sq. m.	Area islands, mil. sq. m.	Area limbs, mil. sq. m.	Area limbs, per cent.
Old World .	35·8	2360					
New World .	16·2	2230					
Eurasia . .	20·85	2620	15·42	4·09	1·34	5·43	26
Africa . .	11·46	2130	11·22	...	0·24	0·24	2·1
North America	9·26	2300	6·92	0·78	1·56	2·34	25
South America	6·84	1970	6·76	0·02	0·06	0·08	1·1
Australia .	3·43	1310	2·77	0·16	0·50	0·66	19
Asia . .	17·02	3120	12·93	3·05	1·04	4·09	24
Europe . .	3·83	980	2·49	1·04	0·30	1·34	35

Antarctic Regions.—The greatest unknown area of the Earth lies in the Antarctic regions, access to which is both difficult and dangerous. After the voyage of Sir James Ross, thirty years elapsed before a further step was taken. Then in 1873–74 the German Captain Dallman visited the neighbourhood of Grahamland. In 1874 H.M.S. *Challenger* was the first steam vessel to cross the Antarctic circle, which she did south of Kerguelen Island, but, not being protected against ice, she could not enter the pack. In the southern summer of 1892–93 several Scottish and Norwegian whalers visited the seas about Grahamland and, though they did but little exploration, brought back some definite additions to knowledge. In 1895 the Norwegian whaler *Antarctic* was the first steamer to push through the Antarctic pack, and Captain Kristensen with Mr Borchgrevink, who had shipped as a sailor, were the first men to land on the supposed Antarctic continent, which they did at Cape Adare. In 1897 a Belgian expedition under Captain de Gerlache, with a cosmopolitan scientific staff, sailed in the *Belgica*, and early in 1898 were caught in the ice-pack west of Grahamland, remaining fast, drifting in the ice for rather more than a year. The members of this expedition were the first to winter within the Antarctic circle, although the farthest point of the drift was only 71° 36′ S.

"Challenger."

Whalers.

"Belgica."

In 1898 Mr C. E. Borchgrevink was sent out by Sir George Newnes as commander of an expedition in the *Southern Cross*, and succeeded in landing early in 1899 with a competent scientific staff at Cape Adare, where they spent a whole year. On the return of the ship to Cape Adare in 1900 Mr Borchgrevink proceeded south to the ice-barrier, saw Mount Erebus, and was able to land on the ice in long. 165° W. and march a few miles inland to 78° 50′ S., a little beyond Ross's farthest point.

Borchgrevink.

Studied in the pages of the Tenth Edition, Geography becomes a subject of deep and varied interest.

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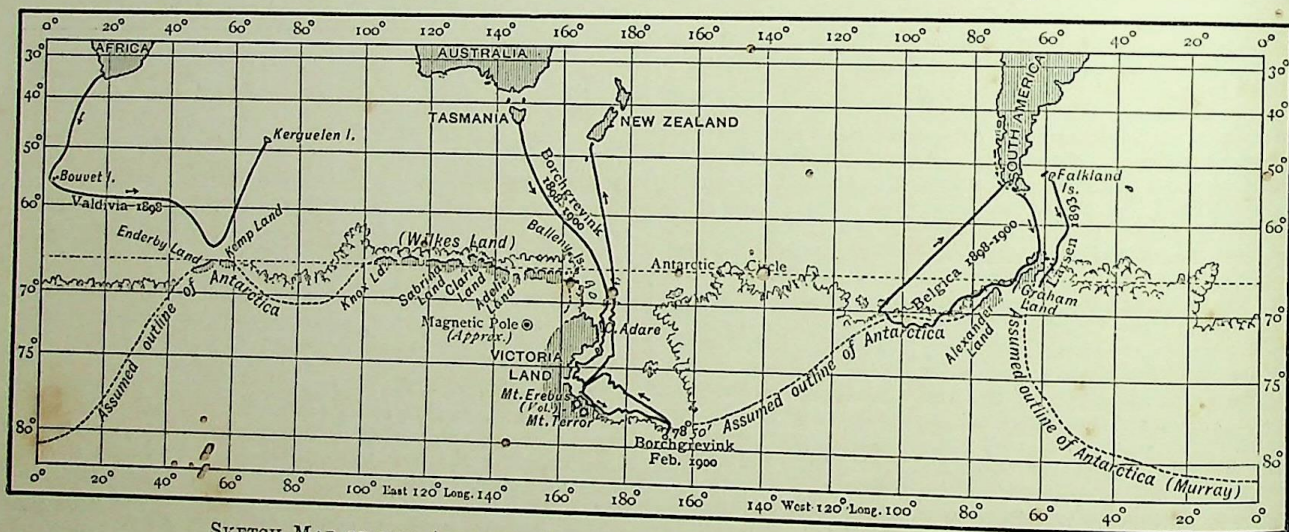
A British expedition under Commander R. F. Scott, R.N., sailed in the *Discovery* in 1901, leaving New Zealand in December for Victoria Land. A German expedition under Professor E. von Drygalski in the *Gauss* made its departure southward simultaneously from Kerguelen, and a Swedish expedition under Dr Otto Nordenskjöld in the *Antarctic* left Buenos Aires for Weddell Sea. In 1902 Mr W. S. Bruce sails in command of a Scottish expedition to Weddell Sea; and the *Morning* takes out a relief party for the *Discovery*. . . . . .

New expeditions.

[*The last word on the modern developments of* GEOGRAPHY *is said in the sixteen-page Article from which these extracts are taken.*]

THE SOUTH POLE.

From the Article by H. R. MILL, *D.Sc., F.R.G.S.*

Polar Regions.— . . . . . . *Recent Exploration.* —The first steamer to cross the Antarctic circle was H.M.S. *Challenger* on 16th February 1874: she only penetrated to 66° 40′ S., in 78° 30′ E., south of Kerguelen Island; but she continued her course to Australia for some distance in a high latitude, passing within 15 miles of the position assigned to Wilkes's Termination Land without seeing any sign of land. Her dredgings and soundings yielded indirect evidence as to the nature of the unknown region farther south. Sir John Murray believed that the soundings showed a general shoaling of the ocean towards the Antarctic ice, indicating the approach to a continent. By collecting and analysing all samples of deep-sea deposits which had been secured from the far south, he discovered a remarkable symmetry in the arrangement of the deposits. The globigerina ooze,

SKETCH MAP OF THE ANTARCTIC REGIONS, SHOWING TRACKS OF RECENT EXPEDITIONS.

or in deeper waters the red clay, carpeting the northern part of the Southern Ocean, merges on the southward into a great ring of diatom ooze, which gives place in turn, towards the ice, to a terrigenous blue mud. The fine rock particles of which the blue mud is composed are such as do not occur on oceanic islands, and the discovery of large blocks of sandstone dropped by icebergs proved the existence of sedimentary rocks within the Antarctic circle. The marine fauna discovered by the *Challenger* contained many species very similar to those common in the Arctic regions, if not identical with them. The suggestion of identical forms occurring in the two polar areas, and absent from the intervening seas, has given rise to a lively discussion amongst biologists. . . . .

[NANSEN *contributes the section of this nine-page Article devoted to the* ARCTIC OCEAN, *and* SIR CLEMENTS R. MARKHAM, *K.C.B., the historical sketch of modern* POLAR EXPLORATION.]

THE RIVALRY OF CREEDS.

From the Article (5 pages) by SIR F. J. D. LUGARD, *K.C.M.G., D.S.O.*

Uganda.— . . . . . . The curse of Uganda has been the rivalry of creeds, though great good has been done by the introduction of Christianity. The leading chiefs now consider it a disgrace not to be able to read and write, while ideas of truth, mercy, and justice have been inculcated. The weak points in the Government administration have been: (1st) The constant change of administrator—no one since the Company left having been in charge for more than a few consecutive months; (2nd) The attempt to dissever Uganda from the coast areas, where the revenue is collected, so that it has no fiscal system of its own.

Uganda, from its geographical position in the centre of the great lake system, and at the head-waters of the Nile, and from the intelligence of its people and the high standard of civilization they have attained, must ever be a possession of great importance, and it is to be hoped that the lessons of the past will prevent similar mistakes in the future, and that this Protectorate will have a great future before it when the railway now nearing completion reaches the lake. . . . .

[*The Encyclopædia Britannica also contains Articles on* EGYPT, AFRICA, BRITISH EAST AFRICA, CENTRAL AFRICA, AUSTRALIA, *&c., &c.*]

LORD CROMER'S POLICY.

From the Article (38 pages) by MAJOR H. G. LYONS, *Director of the Survey Dept., Egypt;* J. L. GORST, *C.B., Financial Adviser to the Egyptian Govt.;* GENERAL SIR EVELYN WOOD, *G.C.B., V.C.;* SIR DONALD MACKENZIE WALLACE, *K.C.I.E., K.C.V.O.;* SIR G. SYDENHAM CLARKE, *K.C.M.G.; and Col.* R. H. VETCH, *C.B.*

Egypt.— . . . . . . With the internal difficulties Sir Evelyn Baring had been struggling bravely ever since his appointment, trying to evolve out of the ever-changing policy and contradictory orders of the British Government some sort of coherent line of action, and to raise the administration to a higher standard. For two or three years it seemed doubtful whether he would succeed. . . . . . . The introduction of English officials and English

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For the titles of some of the articles on Commerce and Shipping, see p 148.

influence into all the administrative departments was resented by the native officials, and the action of the irrigation officers in preventing the customary abuses of the distribution of water was resented by the great landowners, who had been, from time immemorial, in the habit of taking as much as they wanted, to the detriment of the fellaheen. Even these latter, who gained most by the reforms, considered that they had good reason to complain, for the defeat of Arabi and the re-establishment of order had enabled the Christian money-lenders to return and insist on the payment of claims which were supposed to have been extinguished by the rebellion. Worst of all, the Government was drifting rapidly towards insolvency, being quite unable to fulfil its obligations to the bondholders and meet the expenses of administration. All departments were being starved, and even the salaries of poorly paid officials were in arrear. To free itself from its financial difficulties the Government adopted a heroic remedy, which only created fresh troubles. On the advice of Lord Northbrook, who was sent out to Cairo in September 1884 to examine the financial situation, certain revenues which should have been paid into the Caisse for the benefit of the bondholders were paid into the Treasury for the ordinary needs of the administration. Immediately the Powers protested against this infraction of the Law of Liquidation, and the Caisse applied for a writ to the Mixed Tribunals. . . . . .

Internal reorganization.

Fortunately for Egypt, the British Government contrived to solve the international difficulty by timely concessions to the Powers, and succeeded in negotiating the London Convention of March 1885, by which the Egyptian Government was relieved from some of the most onerous stipulations of the Law of Liquidation, and was enabled to raise a loan of £9,000,000 for an annual payment of £135,000. After paying out of the capital the sums required for the indemnities due for the burning of Alexandria and the deficits of the years 1882 and 1883, it still had a million sterling, and boldly invested it in the improvement of irrigation. The investment proved most remunerative, and helped very materially to save the country from bankruptcy and internationalism. The danger of being again subjected to the evils of an international administration was very great, for the London Convention contained a stipulation to the effect that, if Egypt could not pay her way at the end of two years, another International Commission would be appointed.

To obviate this catastrophe the British reformers set to work most energetically. Already something in the way of retrenchment and reform had been accomplished. The public accounts had been put in order, and the abuses in the collection of the land tax removed. The constant drain of money and men for the Sudan had been stopped. A beginning had been made for creating a new army to replace the one that had been disbanded, and to allow of a portion of the British garrison being withdrawn. In this work Sir Evelyn Wood had shown much sound judgment as well as great capacity for military organization, and had formed an efficient force out of very unpromising material (see above, under ARMY). His colleague in the Department of Public Works, Sir Colin Scott Moncrieff, had been not less active. By mitigating the hardships of the *corvée*, and improving the irrigation system on which the prosperity of the country mainly depends, he had conferred enormous benefits on the fellaheen, and had laid the foundation of permanent budgetary equilibrium for the future. Not less active was Sir Edgar Vincent, the Financial Adviser, who kept a firm hold on the purse-strings and ruthlessly cut down expenditure in all departments except that of irrigation.

The activity of the British officials naturally produced a certain amount of discontent and resistance on the part of their Egyptian colleagues, and Lord Granville was obliged to declare very plainly that such resistance could not be tolerated. Writing (January 1884) to Sir Evelyn Baring, he said: "It should be made clear to the Egyptian Ministers and Governors of Provinces that the responsibility which for the time rests on England obliges H.M. Government to insist on the adoption of the policy which they recommend; and that it will be necessary that those Ministers and Governors who do not follow this course should cease to hold their offices." Nubar Pasha, who continued to be Prime Minister, resisted occasionally. What he chiefly objected to was direct interference in the provincial administration and the native tribunals, and he succeeded for a time in preventing such interference. Sir Benson Maxwell and Mr Clifford Lloyd, who had been sent out to reform the Departments of Justice and the Interior, after coming into conflict with each other, were both recalled, and the reforming activity was for a time restricted to the Departments of War, Public Works, and Finance. Gradually the tension between natives and foreigners relaxed, and mutual confidence was established. Experience had evolved the working principle which was officially formulated at a much later period: "Our task is not to rule the Egyptians, but as far as possible to teach the Egyptians to rule themselves." . . .

Relations between British and native officials.

[*The Encyclopædia Britannica also contains Articles on* AFRICA, AFGHANISTAN, BURMA, CYPRUS, KASHMIR, PAMIRS, *&c., &c.*]

FAR NORTH.

From the Article (5 pages) by FRIDTJOF NANSEN, *LL.D., Ph.D.*

Greenland.— . . . . . The whole interior of Greenland is completely covered by the so-called "inland ice," an enormous glacier forming a regular shield-shaped expanse of snow and glacier ice, and burying all valleys and mountains far below its surface. It rises in the interior to a level of 9000 feet, and in places perhaps 10,000 feet or more, and descends gradually by extremely gentle slopes towards the coasts or the bottom of the fjords on all sides, discharging a great part of its yearly drainage or surplus of precipitation in the form of icebergs in the fjords, the so-called ice-fjords, which are numerous both on the west and the east coast. These icebergs float away, and are gradually melted in the sea, which is thus cooled down by cold stored up in the interior of Greenland. . . . . .

. . . . . The ice-cap of Greenland must to some extent be considered as a viscous mass, which, by the vertical pressure in its interior, is pressed outwards and slowly flows towards the coasts, just as a mass of pitch placed on a table and left to itself will in the course of time flow outwards towards all sides. The motion of the outwards-creeping inland ice will naturally be more independent of the configurations of the underlying land in the interior, where its thickness is so enormous, than near the margin where it is thinner. Here the ice converges into the valleys and moves with increasing velocity in the form of glaciers into the fjords, where they break off as icebergs. The drainage of the interior of Greenland is thus partly given off in the solid form of icebergs, partly by the melting of the snow and ice on the surface of the ice-cap, especially near its western margin, and to some slight extent also by the melting produced on its under side by the interior heat of the Earth. . . . .

. . . . . . After Professor Amund Helland had, in July

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For the titles of some of the articles on Ethnology, see p. 163 of this pamphlet.

1875, discovered the amazingly great velocity, up to 66 feet (19·77 m.) in twenty-four hours, with which the glaciers of Greenland move into the sea, the margin of the inland ice and its glaciers was studied by several expeditions. K. J. V. Steenstrup during several years, Captain Hammer in 1879–80, Captain Ryder in 1886–87, Dr Drygalski in 1891–93, and several American expeditions in later years, all examined the question closely. The highest known velocities of glaciers was measured by Ryder in the Upernivik glacier (in 73° N. lat.), where, between the 13th and 14th August of 1886, he found a velocity of 121 feet in twenty-four hours, and an average velocity during several days of 99 feet (Danish). It was, however, ascertained that there is a great difference between the velocities of the glaciers in winter and in summer. . . . .

Swift glaciers.

. . . . . . There seem to be periodical oscillations in the extension of the glaciers and the inland ice similar to those that have been observed on the glaciers of the Alps and elsewhere. . . . .

[*See also* ARCTIC *and* ANTARCTIC REGIONS, POLAR REGIONS, FRANZ JOSEF LAND, ICELAND, *&c., &c.*]

THE RACE FOR DOMINION.

From the Article (38 pages) by J. SCOTT KELTIE, *LL.D., Sec. Royal Geog. Soc.*

Africa.— . . . . . . Great Britain, once roused to the imminence of the danger, put forth vigorous efforts in East Africa and on the Niger, but her most ambitious dream was the establishment of an unbroken line of British possessions and spheres of influence from south to north of the continent, from Cape Colony to Egypt. Germany's ambition can be easily described. It was to secure as much as possible, so as to make up for lost opportunities. French ambitions, apart from Madagascar, were confined to the northern and central portions of the continent. To extend her possessions on the Mediterranean littoral, and to connect them with her colonies in West Africa, the Western Sudan, and on the Congo, by establishing her influence over the vast intermediate regions, was France's first ambition. But the defeat of the Italians in Abyssinia, and the impending downfall of the Khalifa's power in the valley of the Upper Nile, suggested a still more daring project to the French Government—none other than the establishment of French influence over a broad belt of territory stretching across the continent from west to east, from Senegal on the Atlantic coast to Jibutil on the Gulf of Aden. These conflicting ambitions could not all be realized, and Germany succeeded in preventing Great Britain from realizing her ambition of a continuous band of British territory from south to north, while Great Britain, by excluding France from the Upper Nile valley, dispelled the French dream of an empire from west to east.

It was in the struggle between France and Great Britain for the Upper Nile valley that the ambition of King Leopold involved the Congo Free State. The Egyptian Sudan, after the death of Gordon in January 1885, was abandoned to the Mahdi. The Egyptian frontier was withdrawn to Wady-Halfa, and the vast provinces of Kordofan, Darfur, and the Bahr-el-Ghazal were given over to Dervish tyranny and misrule. But it was obvious that this was not a state of things which could continue indefinitely. Under the wise guidance of Lord Cromer the finances of Egypt had been placed on a sound basis, and under British officers the despised fellaheen had developed soldierly qualities of which they had before given no sign. That Egypt would seek to recover her position in the Sudan was a foregone conclusion, as the command of the Upper Nile was recognized as essential to her continued prosperity. But the international position of the abandoned provinces was by no means clear. The British Government, by the Anglo-German agreement of July 1890, had secured the assent of Germany to the proposition that the British sphere of influence in East Africa was bounded on the west by the Congo Free State and by "the western watershed of the basin of the Upper Nile"; but this claim was not recognized either by France or by the Congo Free State. From her base on the Congo, France was busily engaged pushing forward along the northern tributaries of the great river. On 27th April 1887 an agreement was signed with the Congo Free State by which the right bank of the Mobangi river was secured to French influence, and the left bank to the Congo Free State, with this proviso, that the northern boundary of the Free State was not to descend below the fourth parallel of north latitude. The desire of France to secure a footing in the Upper Nile valley was partly due, as we have seen, to her anxiety to extend a French zone across Africa, but it was also and to a large extent attributable to the belief, widely entertained in France, that by establishing herself on the Upper Nile France could regain the position in Egyptian affairs which she had sacrificed in 1882. With these strong inducements France set steadily to work to consolidate her position on the tributary streams of the Upper Congo basin, preparatory to crossing into the valley of the Upper Nile. As a step in this direction the Mobangi region was constituted a separate province, under M. Liotard as governor. Meanwhile a similar advance was being made from the Congo Free State northwards and eastwards. King Leopold had two objects in view—to obtain control of the rich province of the Bahr-el-Ghazal and to secure an outlet on the Nile. Stations were established on the Welle river, and in February 1891, Captain van Kerckhoven left Leopoldville for the Upper Welle with the most powerful expedition which had, up to that time, been organized by the Free State. After some heavy fighting the expedition reached the Nile in September 1892, and opened up communications with the remains of the old Egyptian garrison at Wadelai. Other expeditions under Belgian officers penetrated into the Bahr-el-Ghazal, and it was apparent that King Leopold proposed to rely on effective occupation as an answer to any claims which might be advanced by either Great Britain or France. The news of what was happening in this remote region of Africa filtered through to Europe very slowly, but King Leopold was warned on several occasions that Great Britain would not recognize any claims by the Congo Free State on the Bahr-el-Ghazal. The difficulty was, however, that neither from Egypt, whence the road was barred by the Khalifa, nor from Uganda, which was too far removed from the coast to serve as the base of a large expedition, could a British force be despatched to take effective occupation of the Upper Nile valley. . . . .

King Leopold and the Nile.

In these circumstances Lord Rosebery, who was then foreign minister, began, and his successor, Lord Kimberley, completed, negotiations with King Leopold which resulted in the conclusion of the Anglo-Congolese agreement of 12th May 1894. By this agreement King Leopold recognized the British sphere of influence as laid down in the Anglo-German agreement of July 1890, and Great Britain granted a lease to King Leopold of certain territories in the Western basin of the Upper Nile, extending on the Nile from a point on Lake Albert to Fashoda, and westward to the Congo-Nile watershed. The practical effect

The Anglo-Congolese agreement of 1894.

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For facsimile page of the Encyclopædia Britannica see p. 103.

of this agreement was to give the Congo Free State a lease, during its sovereign's lifetime, of the old Bahr-el-Ghazal province, and to secure after His Majesty's death a portion of that territory, with access to a port on Lake Albert, to his successor. At the same time the Congo Free State leased to Great Britain a strip of territory, 15½ miles in breadth, between the north end of Lake Tanganyika and the south end of Lake Albert Edward. This agreement was hailed as a notable triumph for British diplomacy. But the triumph was short-lived. By the agreement of July 1890 with Germany, Great Britain had been reluctantly compelled to abandon her hopes of through communication between the British spheres in the northern and southern parts of the continent, and to consent to the boundary of German East Africa marching with the eastern frontier of the Congo Free State. Germany frankly avowed that she did not wish to have a powerful neighbour interposed between herself and the Congo Free State, and later troubles as to frontiers in the Lake Kivu region fully justified the attitude of the German Government. It was obvious that the new agreement would effect precisely what Germany had declined to agree to in 1890. Accordingly Germany protested in such vigorous terms that, on the 22nd June 1894, the offending article was withdrawn by an exchange of notes between Great Britain and the Congo Free State. Opinion in France was equally excited by the new agreement. It was obvious that the lease to the Congo Free State was intended to exclude France from the Nile by placing the Congo Free State as a barrier across her path. Pressure was brought to bear on King Leopold, from Paris, to renounce the rights acquired under the agreement. It is not known what communications, if any, passed between the sovereign of the Free State and the British Government, whether King Leopold asked for, or was refused, support against French pressure; but on the 14th August 1894 King Leopold signed an agreement with France, by which, in exchange for France's acknowledgment of the Mbomu river as his northern frontier, His Majesty renounced all occupation and all exercise of political influence west of 30° E. longitude, and north of a line drawn from the intersection of that meridian with the parallel 5° 13′ of N. latitude, and along that parallel to the Nile. . . . . .

[*The Encyclopædia Britannica also contains Articles on* EGYPT, UGANDA, SOUTH AFRICA (BRITISH), BRITISH CENTRAL AFRICA, ORANGE RIVER COLONY, SWAZILAND, ZULULAND, AUSTRALIA, *&c., &c.*]

FROM PETERSBURG TO PORT ARTHUR.

From the Article (17 pages) by Prince KROPOTKIN.

Siberia.— . . . . . . The several sections of the line as now built or planned are as follows; it will be seen —(6)—that in its last portions the route has had to be modified somewhat: (1) Tchelyabinsk to the Ob (Krivoschokovo village), 881 miles. On this stretch the line crosses a fertile prairie very similar to the Winnipeg prairies in Canada, and well populated; it crosses the Tobol, the Ishim, and the Irtysh. (2) From the Ob to Irkutsk, 1137 miles. This part of the line crosses first a slightly higher "rolling prairie" (similar to the Calgary rolling prairie of Canada), and at Achinsk enters the still higher plains of Eastern Siberia, crossing the low spurs of the mountain region of South Yeniseisk. Excavations and high embankments had to be made on this last stretch, and several large rivers—Tom, Yaya, Kiya, Oka, Tchulym, all very rapid and liable to suddenly inundate the surrounding country—had to be crossed, as well as the Yenisei, near Krasoneyarsk. (3) From Irkutsk to Listoenichuaya, on Lake Baikal (41 miles), along the rocky valley of the Augara. (4) Round Lake Baikal's southern extremity. This section is not yet built, nor will it be built for some time on account of the great difficulties offered by the high and craggy mountains (Khamar-datan), sloping precipitously towards the lake, and pouring into it hundreds of streams, each of which is a wild torrent at certain times of the year. At present two powerful ice-breakers carry the trains over the lake to the Mysovaya station in Transbaikalia. (5) From Mysovaya to Tchita and Sryetensk, on the Shilka, 687 miles. This line gradually ascends by way of the valleys of the Selenga and the Elda to the level of the plateau, and crossing the south-eastern border ridge of this—Yablonovoi Khrebet—at an altitude of 3412 feet, reaches the Tchita river near its junction with the Lugoda. This last river is followed to its junction with the Shilka, and the Shilka down to Sryetensk. (6) For reasons indicated elsewhere, it was found inadvisable to continue the railroad along the Shilka and the Amur to Khabarovsk, and negotiations with the Chinese Government for a Trans-Manchurian railway were successfully carried out. This line will connect Kaidalovo, below Chita, directly with Vladivostok. Those parts of it which run through Russian territory (in Transbaikalia, from Kaidalovo to Nagadan—216 miles; in the neighbourhood of Vladivostok, from Nikolsk to the Manchurian frontier—72 miles) are in working order, and the Trans-Manchurian line (1607 miles) has made fair progress. (7) A line was constructed from Vladivostok to the Amur before it became known that the idea of following the latter part of the route originally laid down would have to be abandoned. This line, which has been in working order since 1898, is 477 miles long, and proceeds first to Grafskaya, across the fertile and populous South Usuri region, then down the right bank of the Usuri to Khabarovsk, across marshy and woody tracts, almost useless for purposes of cultivation.

Returning westwards, it may be noticed that Tchelyabinsk has been connected with Ekaterinburg (150 miles); and that a branch line has been built to Tomsk (60 miles). Altogether the Trans-Siberian line has been built very rapidly. In 1893, 256 miles of rail were laid down; in 1894, 552 miles; in 1895, 832 miles; in 1896, 454 miles; in 1897, 438 miles; in 1898, 478 miles; in 1899, 490 miles; and in 1900, 288 miles, making a total for the eight years of 3788 miles. The total cost of the 3721 miles already opened for traffic in the first months of 1901 was 327,794,685 roubles, to which the estimated cost of the 193 miles round Lake Baikal, that is, 37,618,900 roubles, has to be added. Various works have also been carried out along the Siberian rivers and at the port of Vladivostok in order to improve navigation, the total cost of which is estimated at 466,110,019 roubles. If the Perm-Kotlas railway and the feeding lines are taken into account, the whole enterprise has cost so far over 529,000,000 roubles.

. . . .

[*The Encyclopædia Britannica also contains historical, geographical, and statistical accounts of* RUSSIA, CHINA, JAPAN, PERU, PERSIA, ABYSSINIA, AFGHANISTAN, BRAZIL, BULGARIA, RUMANIA, MOROCCO, SAHARA, *&c., &c.*]

To many persons the long array of strange names and remote places in "Bradshaw" provides fascinating recreation in an idle half-hour. The INDEX to the Tenth Edition gives the reader an inexhaustible collection of references to passages on geographical subjects in the Encyclopædia Britannica. With the Index and the Volumes themselves we can turn idle curiosity into profit and pleasure.

Lord Rayleigh writes on ARGON in Vol. 25.

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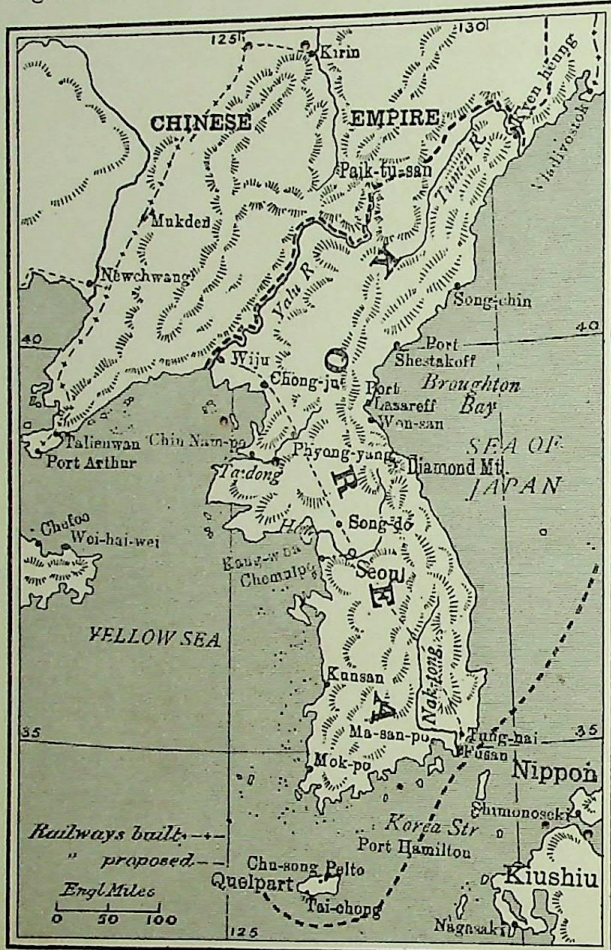
For the titles of some of the articles on Medical subjects, see p. 197 of this review.

THE FUTURE BATTLE-GROUND OF THE FAR EAST.

From the Article (5 pages) by Mrs ISABELLA L. BISHOP, *F.R.G.S.*

Korea (CH'AO HSIEN, DAI HAN).—Korea is an empire of Eastern Asia, the mainland portion of which consists of a peninsula stretching southwards from the maritime province of Siberia and Chinese Manchuria, with an estimated length of about 600 miles, an extreme breadth of 135 miles,

SKETCH MAP OF KOREA.

and a coast-line of 1740 miles. It extends from 34° 18′ to 43° N., and from 124° 36′ to 130° 47′ E. Its northern boundary, on which it is conterminous with Russia for 11 miles, is marked by the Tumen and Yalu rivers; the eastern by the Sea of Japan; the southern by the Strait of Korea; and the western by the Yalu and the Yellow Sea, down to which, from Krasnoye Celo, where three empires meet, it has China on its frontier. The south and west coasts are fringed by about 200 islands (exclusive of islets), two-thirds of which are inhabited; 100 of them are from 100 to 2000 feet in height, and many consist of bold bare masses of volcanic rock.

. . . .

Government.—Up to July 1894 the system of administration was modelled on that of China, except that government was in the hands of a hereditary aristocracy, privileged and corrupt. The king was absolute, and law consisted practically of royal edicts published in the *Gazette.* During the war between Japan and China, Japan, then in the ascendant, devised special machinery for the reform of Korean abuses, and during the following months the administration was reorganized and greatly assimilated to that of Japan. Between the close of 1895 and 1900 there were ceaseless administrative fluctuations; valuable reforms quietly lapsed; the general movement was retrograde, and the old order now exists in the spirit if not in the letter. The emperor is an independent and practically an absolute sovereign, the modifying influence of the cabinet having become insignificant. The central Government consists of a Council of State formed of a president premier, and the heads of nine departments—Home Office, Foreign Office, Treasury, War Office, Education, Justice, and the Ministry of Agriculture, Trade, and Industry, with their subordinate bureaus. This body frames laws and passes resolutions which require the imperial seal for their validity. There is a Privy Council (consisting of a president, vice-president, not more than fifty councillors appointed by the throne, and two secretaries), which is empowered, when consulted by the cabinet, to inquire into questions referred to it. . . . .

. . . .

Production and Industries.—(i.) *Minerals.*—Extensive coalfields, producing coal of fair quality, as yet undeveloped, occur in Hwang-hai Do and elsewhere. Iron is abundant, especially is Phyöng-an Do, and rich copper ore, silver, and galena are found. Experts believe that reefs of rich auriferous quartz exist. In 1885 the rudest process of "placer" washing produced an export of gold dust amounting to £120,000, and in 1897 to £205,529. These are the amounts declared as passing through the customs, but it is estimated that more than double these values leaves Korea clandestinely. The reefs were left untouched till 1897, when an American company, which had obtained a concession in Phyöng-an Do in 1895, introduced the latest mining appliances, and raised the declared export of 1898 to £240,047, believed to represent a yield for that year of £600,000. Russian, German, and English applicants have since obtained concessions. The *concessionnaires* regard Korean labour as docile and intelligent.

. . . . . . From 1882 to 1894 the chief event in the newly-opened Kingdom was a plot by the Tai-won-Kun, the present emperor's father, to seize on power, which led to an attack on the Japanese Legation, the members of which were compelled to fight their way, and that not bloodlessly, to the sea. Japan secured ample compensation; and the Chinese Resident, aided by Chinese troops, deported the Tai-won-Kun to Tientsin. In 1884 at an official banquet the leaders of the progressive party assassinated six leading Korean statesmen, and the intrigues in Korea of the banished or escaped conspirators have created difficulties which have not yet subsided. In spite of a constant struggle for ascendancy between the queen and the returned Tai-won-Kun, the next decade was one of quiet. China, always esteemed in Korea, consolidated her influence under the new conditions through a powerful Resident; prosperity advanced, and certain reforms were projected by foreign "advisers." In May 1894 a more important insurrectionary rising than usual led the king to ask armed aid from China. She landed 2000 troops on 10th June, having previously, in accordance with treaty provisions, notified Japan of her intention. Soon after this Japan had 12,000 troops in Korea, and occupied the capital and the treaty ports. Then Japan made three sensible proposals for Korean reform, to be undertaken jointly by herself and China. China replied that Korea must be left to reform herself, and that the withdrawal of the Japanese troops must precede negotiations. Japan rejected this suggestion, and on 23rd July attacked and occupied the royal palace. After some further negotiations and fights by land and sea between Japan and China war was declared formally by Japan, and Korea was for some time the battle-ground of the belligerents. The Japanese victories resulted for Korea in the solemn renunciation of Chinese suzerainty by the Korean king, the substitution of Japanese for Chinese influence, the introduction of many important reforms under Japanese advisers, and of checks on the absolutism of the throne. Everything promised well. The finances flourished under the capable control of Mr M'Leavy Brown, C.M.G. Large and judicious retrenchments were carried out in most of the Government departments. A measure of judicial and prison reform was granted. Taxation was placed on an equable basis. The pressure

The Grand Cañon of Colorado, Arizona, is described in the Tenth Edition.

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HOW THE INDEX WILL HELP THE GEOGRAPHICAL STUDENT.

IN the adjoining extract from the Index to the Tenth Edition it may be seen that INFORMATION CONCERNING GLACIERS OCCURS IN THIRTEEN DIFFERENT VOLUMES OF THE *ENCYCLOPÆDIA BRITANNICA* (the numbers after each successive word in the adjoining fragment representing the number of the volume and page of that volume in which each entry occurs). The editors have thus saved the reader from a labour which it would take the most painstaking and intelligent person weeks to complete. At a single glance, almost in a second of time, he is enabled to discover precisely where to go for the information he seeks.

of the trade guilds was relaxed. Postal and educational systems were introduced. An approach to a constitution was made. The distinction between patrician and plebeian, domestic slavery, and beating and slicing to death were abolished. The age for marriage of both sexes was raised. Chinese literary examinations ceased to be a passport to office. Classes previously degraded were enfranchised, and the alliance between two essentially corrupt systems of government was severed. For about eighteen months all the departments were practically under Japanese control. On 8th October 1895 the Tai-won-Kun, with Korean troops, aided by Japanese troops under the orders of Viscount Miura, the Japanese minister, captured the palace, assassinated the queen, and made a prisoner of the king, who, however, four months later, escaped to the Russian Legation, where he remained till the spring of 1897. Japanese influence waned. The engagements of the advisers were not renewed. A strong retrograde movement set in. Reforms were dropped. The king, with the checks upon his absolutism removed, reverted to the worst traditions of his dynasty, and the control and arrangements of finance were upset by Russia. Korea, incapable of standing alone, now leans upon Russia or Japan, according to the pressure applied at the time. . . . .

[*Far-Eastern Problems are also dealt with in the Encyclopædia Britannica under headings* JAPAN, RUSSIA, CHINA, COMMAND OF THE SEA, MANCHURIA, SIBERIA, *&c., &c.*]

EBB AND FLOW.

From the Article (12 pages) by GEORGE HOWARD DARWIN, *M.A., LL.D., D.Sc., F.R.S.*

Tides.— . . . . . . It has been known for several centuries that the water of the Lake Geneva is apt to rise and fall by a few inches, sometimes irregularly and sometimes with more or less regularity. Since the water ebbs and flows, these oscillations present some resemblance to true tides, and the phenomenon is sufficiently conspicuous to have gained from the inhabitants of the shores of the lake the name of Seiche. It was discovered during the last half of the 19th century that these waves are not peculiar to the basin of Geneva, and the name seiche has been generally adopted, whether we speak of the waters of a lake or of a landlocked arm of the sea. . . . .

Seiches on Lake of Geneva.

The tide-wave rises as a bore in the Severn, the Wye, the Seine, and the Garonne; perhaps also in other rivers in England and France. But its appearance is capricious, and it is usually conspicuous only at spring-tides and with the wind in certain directions. There is indeed, as far as we know, only one river in which the bore occurs at every tide without exception; that is the Tsientang-kiang, which flows into the China Sea about 60 miles south of the great Yangtse-kiang. Some interesting observations of the bore in the Tsientang were made in 1888 and 1892 by Captain Moore, R.N., when in command of H.M.S. *Rambler*. His survey of the estuary was attended by some danger from the extreme violence of the currents—dangers which experience has taught the navigators of Chinese junks how to avoid. Captain Moore's two reports give many interesting details, and present a graphic description of the bore, together with careful measurements of the rise and fall of the tide in this estuary. . . . .

Bore of the Tsien-tang-kiang.

Mr W. Bell Dawson has also made observations at Moncton, on the Petitcodiac river, in the Bay of Fundy, of a bore only slightly less remarkable than the Chinese example. Careful observations of the rise of water at a fixed spot, together with measurements of the rate of progress of the bore up-stream, have enabled Mr Dawson to draw the profile of the tide-wave. The bore itself consists of a precipitous slope of water; and this is succeeded by a more gradual slope, which is, however, interrupted at intervals by several steps or minor bores. . . . . . .

Bore of the Petit-codiac.

[*Scientific geography is dealt with in the Encyclopædia Britannica under headings* OCEANOGRAPHY, LIMNOLOGY, MAP, EARTH (FIGURE OF), *and the several articles under names of Oceans and Seas.*]

Remember that these articles bring the subject of geographical science up to the present date, and that the Tenth Edition gives you, in many cases, the personal accounts of the explorers themselves.

One of the most frequent contrasts made between the Old World and the New is based on the increased facilities of communication by sea and rail, which are the characteristic geographical feature of our time. The poetry of discovery, inextinguishable as it is, has to a large extent been superseded by the poetry of population and the rapid growth of cities. We not only read, think, and dream of remote places, but we visit them, and so the narrow vision of local prejudice gives way before an increase of personal knowledge in the methods and traditions of foreign countries. Englishmen to-day learn much in science, in commerce, in industry, and in art from France, Germany, America. Foreign countries, too, learn much from England in the principles of government, in athletics, in veneration for the past. National pride has not decreased, but the basis on which it rests can be ascertained with greater accuracy by the interchange of thought among nations. The connexion between this phenomenon and the triumphs of exploration and geographical research, which are so fully recorded in the Tenth Edition of the *Encyclopædia Britannica*, is in itself a sufficient recommendation to the reader of the value which attaches to possession of the book.

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THE MAPS in the *Encyclopædia Britannica* are not only up to date in respect of the information they contain, but thoroughly modern also in regard to the ingenious devices by which they yield the clearest idea in exchange for the briefest examination. Railways are throughout printed in red, so that they stand out clearly from the black used for the names and places, and for the winding lines which indicate rivers and high roads and are in ordinary maps quite indistinguishable from railway lines. The depth of water in enclosed seas, bays and harbours, and in such parts of the ocean as have been officially sounded, are given in accordance with the latest charts of the Admiralty, and the information afforded by the maps is throughout officially authoritative in character, and yet presented with a greater regard for the reader's convenience than is usually shown in official publications. Contour lines indicate the elevations and depressions of each country, so that ranges of hills and table-lands are as clearly shown as if each map were a model of the country in relief. In addition to a general index of over half a million entries, the *Encyclopædia Britannica* contains a special index to the maps, so that the reader who knows that he desires to refer only to a map, finds with the least possible trouble any one of the 200,000 towns, villages, or rivers, lakes, bays or other physical features named in the index. The perplexities which arise from alternative spellings of geographical names in an ordinary atlas are especially formidable in the case of oriental countries where a name has, strictly speaking, no English equivalent, and is transliterated in various forms by the writers of various books of travel. In the special map-index all the varying spellings are given as cross-references. An examination of the specimen-map which will be found at pp. 50-51 of this pamphlet, and the specimens of the index which will be found on pp. 164-165, will show how successfully the editors have met the defects which usually attend the use of maps.

The 35 Volumes are in themselves a Globe of information, through the hills and vales of which the reader may make a perpetual voyage of delight.

SEAS & OCEANS.

THE following are some of the articles dealing with the Water Surface of the World treated in detail in the *Encyclopædia Britannica:*

Atlantic Ocean.	Dead Sea.	Oceanography.	Sea Water.
Baltic Sea.	Indian Ocean.	Pacific Ocean.	Tides.
Black Sea.	North Sea.	Red Sea.	Wave.
Caspian Sea.	Norwegian Sea.	Sounding.	Whirlpool.

A few of the Islands to which separate Articles have been devoted in the Encyclopædia Britannica.

Andaman Islands.	Cyprus.	Malta.
Borneo.	Fiji Islands.	Malay Archipelago.
Canary Islands.	Hawaiian Islands.	Philippine Islands.
Celebes.	Heligoland.	Prince Edward Isle.
Corsica.	Java.	Samothrace.
Crete.	Ladrones.	Sardinia.
Cuba.	Madagascar.	Solomon Islands.

A List of only Twenty of the Cities, Ancient and Modern, treated under separate headings in the Encyclopædia Britannica.

Athens. Bayreuth. Belgrade.
Berlin. Cadiz. Cairo. Carthage.
Corinth. Damascus. Jerusalem.

Padua.
Palmyra.
Paris.
Peking.
Pompeii.

The FORESTS of the Four Continents have 24 pages devoted to them in the Tenth Edition.

Rome.
Samos.
Shanghai.
Thule.
Troy.

THE GEOGRAPHICAL ARTICLES in the *Encyclopædia Britannica* contain a mass of information in comparison with which all that may be learned from a map is insignificant. If you turn to a man's name in the *Post Office Directory* and find that his house stands in a certain street and bears a certain number, you have acquired an item of information which almost exactly corresponds with the knowledge a map yields in regard to a place. The man himself is still a stranger to you, and if you know places only as you have seen them on a map, your position is much like that of a person whose only acquaintance with the life-work of Gladstone or Bismarck consisted of a knowledge of the addresses at which they lived. The geographical articles invest with blood and flesh and life the bare skeleton of a map. To give a mere list of these articles would fill pages of this pamphlet, and even to name those that are of marked interest to every one who studies the history of our time would fill an unconscionable space; but some idea of the fascination, as well as of the utility of these articles, may be gained by considering a few among those which commence with only one letter of the alphabet. Abyssinia is treated by Count Gleichen, by Prof. A. H. Keane, F.R.G.S., and by David Kay. At the present moment, notwithstanding the expenditure of blood and treasure in the protracted struggle between Abyssinia and Italy, it seems plain that British influence in that extraordinary country has sensibly increased within the last few years owing to the respect with which Abyssinia regarded British activity as shown in the conquest of the Sudan, the destruction of the dervishes, and the opening of the Nile. If Menelik is succeeded by another emperor as enlightened, there is every probability that Abyssinia will year by year increase its trade with Great Britain, and in this article, as throughout the *Encyclopædia Britannica*, there is found a thoroughly practical description not only of the exports, the characteristic flora, the climatic conditions, the possibility of internal navigation and of irrigation, but also a description of the markets and the chief towns.

Afghanistan as it is to-day is treated by Col. Sir Thomas H. Holdich, K.C.I.E., C.B., whose long experience of boundary service has given him an insight into Afghan politics which could hardly be obtained by any one who has not enjoyed the advantages of official position. Special knowledge has thus been the qualification of contributors of Geographical Articles to the Tenth Edition.

Among the contributors of Geographical Articles to the Tenth Edition are PRINCE KROPOTKIN, Sir CLEMENTS R. MARKHAM, K.C.B., Sir C. W. WILSON, K.C.I.E., Sir T. H. HOLDICH, K.C.I.E., NANSEN, Sir H. H. JOHNSTON, G.C.M.G., Sir F. LUGARD, Sir EDWARD H. BUNBURY, Bart., M.A., Sir W. MARTIN CONWAY.

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LAW

Our Constitution stands on a nice Equipoise, with steep precipices and deep waters upon all sides of it. In removing it from a dangerous leaning towards one side, there may be a risk of oversetting it in the other. Every project of a material change in a Government so complicated as ours is a matter full of difficulties, in which a considerate man will not be too ready to decide, a prudent man too ready to undertake, or an honest man too ready to promise.—EDMUND BURKE.

OME knowledge of Constitutional Law is an indispensable attribute of every educated man; for whether the inviolability of the Constitution is a mere figure in rhetoric or an adamantine fact in history, it has undeniably served as a model of civilization in numerous portions of the globe. In all governments, especially in those having the longest historical traditions, the law occupies a place of great veneration in the minds of the people. Great trials arouse universal interest, great judgments excite keen comment. But it is not only in its more obviously impressive light that the law makes just demands on our attention. Litigation should be reserved for circumstances of a serious and complex nature. But a knowledge of the law in matters of smaller issue may often save us from those larger and more fateful issues, in contesting which a rightful plaintiff too often wins his case with the ruin of his pocket.

One of the simplest and least well known maxims in English Law is, that ignorance of the law is no excuse for its violation. When we take an omnibus or when we post a letter, we are engaging in a contract of which the terms can be legally defined. A man who raises his stick at an insolent street urchin, although he fails to hit him, may be cited to appear as defendant in an action for Assault. It would be well if we were to acquire facts like these at school; as it is we need a competent book of reference which could clear up our doubts as to the legal obligations and the legal rights which become ours in the course of our daily experience.

The Encyclopædia Britannica contains a vast quantity of legal knowledge, of which the extracts quoted below are no more than sign-posts pointing the way to the great regions of Common Law, Equity, State Legislation, and the innumerable subdivisions to which complete articles have been devoted throughout the Volumes. With the additional convenience of an Index, more comprehensive than any yet planned, it will be easily seen that the initial difficulty of discovering a minute and important fact in a mass of general legal information has been successfully surmounted.

THE PERFECTION OF POLITICAL WISDOM

From the Article by EDMUND ROBERTSON, *LL.D., M.P., Barrister-at-law, late Professor of Roman Law, University College, London.*

Constitution and Constitutional Law. . . . . . . And just as the law, while professing to remain the same, is in process of constant change, so, too, the unwritten constitution is, without any acknowledgment of the fact, constantly taking up new ground.

In contrast with the mobility of an unwritten constitution is the fixity of a constitution written out, like that of the United States or Switzerland, in one authoritative code. The constitution of the United States, drawn up by a Convention of 1789, is contained in a code of articles. It was ratified separately by each State, and thenceforward became the positive and exclusive statement of the constitution. The legislative powers of the Legislature are not to extend to certain kinds of bills, *e.g., ex post facto* bills; the president has a veto which can only be overcome by a majority of two-thirds in both Houses; the constitution itself can only be changed in any particular by the consent of the legislatures or conventions of three-fourths of the several States; and, finally, the judges of the supreme court are to decide in all disputed cases whether an act of the legislature is permitted by the constitution or not. This is truly a formidable apparatus of provisions against change, and, in fact, only fifteen constitutional amendments have been passed from 1789 to the present day. In the same period the unwritten constitution of England has made a most marked advance, chiefly in the direction of eliminating the separate powers of the Crown, and diminishing those of the House of Lords. The Commons, through its nominees, the Ministry, has absorbed the entire power of the Crown, and it has more and more reduced the other House to a position of secondary importance. The American constitution of 1789 was a faithful copy, so far as it was possible to make one out of the materials in hand, of the contemporary constitution of England. The position and powers of the President were a fair counterpart of the royal prerogative of that day; the Senate and the Congress corresponded sufficiently well to the House of Lords and the House of Commons, allowing for the absence of the elements of hereditary rank and territorial influence. . . . .

Notwithstanding the strongly marked historical character of our political institutions, the fallacy of regarding them as elaborate contrivances devised to effect the end of good government has always more or less prevailed. It finds expression in what is called the theory of checks and balances—the theory that power is so distributed among the different elements of the state that each acts as a check on the other, and none is supreme. So Blackstone and writers of his class tell us that the English constitution is the perfection of political wisdom, inasmuch as it combines the virtues of monarchy, aristocracy, and democracy without the faults which would attend any one of these varieties of government unmodified by the others. The tendency to repeat the English type of Parliament, in artificial or paper constitutions, is probably not entirely unconnected with this habit of mind. The question of a second chamber has been a practical difficulty of the first importance in all such constitutions. The attempt to imitate the duality of the English Parliament results in two co-ordinate Houses of legislature, each of which may at any moment bring legislation to a stop. "In both the American and the Swiss constitutions," says an eminent writer on this subject (Mr Bagehot), "the Upper House has as much authority as the second; it could produce the

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For the titles of some of the articles on Musical Subjects, see p. 132 of this Review.

maximum of impediment, the dead-lock, if it liked; if it does not do so it is owing, not to the goodness of the legal constitution, but to the discreetness of members of the chamber." The explanation may not unreasonably be found in the impossibility of creating a second chamber with the same character which its history has imposed on the English House of Lords. Our two Houses are far from being of co-ordinate authority. In the last result the will of the House of Commons must prevail.

A further exemplification of this view of the British constitution may be found in the fact that its highest executive council, the Cabinet, is not even known to the law. . . . .

[*The Article on* WALTER BAGEHOT *by Sir* ROBERT GIFFEN, *K.C.B., F.R.S., is a pathetic and absorbing account of a brilliant career.*]

STATE OF LAW AND TENDENCY OF LEGAL EDUCATION.

From the Article (7½ pages) *by* F. W. MAITLAND, *LL.D., D.C.L., Professor of English Law, Cambridge University.*

English Law. . . . . . In the latter half of the 19th century some great and wise changes were made by the Legislature. Notably in 1875 the old courts were merged in a new Supreme Court of Judicature, and a concurrent administration of law and equity was introduced. Successful endeavours have been made also to reduce the bulk of old statute law, and to improve the form of Acts of Parliament; but the emergence of new forces whose nature may be suggested by some such names as "socialism" and "imperialism" has distracted the attention of the British Parliament from the commonplace law of the land, and the development of obstructive tactics has caused the issue of too many statutes whose brevity was purchased by disgraceful obscurity. By way of "partial codification" some branches of the common law (bills of exchange, sale of goods, partnership) have been skilfully stated in statutes; but a draft criminal code, upon which much expert labour was expended, lies pigeonholed and almost forgotten. British India has been the scene of some large legislative exploits, and in America a few big experiments have been made in the way of code-making, but have given little satisfaction to the bulk of those who are competent to appreciate their results. In England there are large portions of the law which, in their present condition, no one would think of codifying: notably the law of real property, in which may still be found numerous hurtful relics of bygone centuries. So omnipresent are statutes throughout the whole field of jurisprudence, that the opportunity of doing any great feat in the development of law can come but seldom to a modern court. More and more, therefore, the fate of English law depends on the will of Parliament, or rather of the ministry. The quality of legal text-books has steadily improved; some of them are models of clear statement and good arrangement; but no one has with any success aspired to be the Blackstone of a new age. In the matter of legal education it is to be feared that England has fallen behind America. The civil law that was taught in the two universities began to lose its interest in the 17th century. The domain which nominally belonged to its doctors, the old ecclesiastical domain, was being covered by English statutes and English precedents; the Chancery stole work from the ecclesiastical courts, and diplomatists of the modern type appropriated a field in which civilians had been active. On the other hand, the scholastic scheme which obtained in the Inns of Court quickly degenerated into a course of perfunctory exercises, and, finally, into a course of dinners supplemented by such instruction as a busy barrister might or might not give to his private pupils. Endeavours to remedy this state of things have been made, both by the Inns and by the Universities, but no plan of legal education that can be unreservedly commended has yet been established. Owing to the non-existence of flourishing schools of law, England has hardly taken the share which should by rights have been hers in that systematic study of the history of law which was one of the main tasks of the 19th century. (F. W. M.)

[*In connexion with this extract the reader should see the Articles on* JUDICATURE ACTS, CODE, CHANCERY, UNIVERSITIES (33 *pages*), BLACKSTONE, COMMON LAW.]

A JUDGE ON HIS OWN SUBJECT.

From the Article (14 pages) *by the Right Honourable* Sir FRANCIS JEUNE, *K.C.B., President of Probate, Divorce, and Admiralty Division.*

Divorce.— . . . . . . It is obvious that the necessity for costly proceedings before the Houses of Parliament imposed great hardship on the mass of the population, and there can be little doubt that this hardship was deeply felt. Repeated proposals were made to Parliament with a view to reform of the law, and more than one commission reported on the subject. It is said that the final impetus was given by an address to a prisoner by Mr Justice Maule. The prisoner's wife had deserted him with her paramour, and he married again during her lifetime. He was indicted for bigamy, and convicted, and Mr Justice Maule sentenced him in the following words:—"Prisoner at the bar: You have been convicted of the offence of bigamy, that is to say, of marrying a woman while you had a wife still alive, though it is true she has deserted you and is living in adultery with another man. You have, therefore, committed a crime against the laws of your country, and you have also acted under a very serious misapprehension of the course which you ought to have pursued. You should have gone to the ecclesiastical Court and there obtained against your wife a decree *a mensâ et thoro*. You should then have brought an action in the courts of common law, and recovered, as no doubt you would have recovered, damages against your wife's paramour. Armed with these decrees, you should have approached the Legislature and obtained an Act of Parliament which would have rendered you free and legally competent to marry the person whom you have taken on yourself to marry with no such sanction. It is quite true that these proceedings would have cost you many hundreds of pounds, whereas you, probably, have not as many pence. But the law knows no distinction between rich and poor. The sentence of the Court upon you, therefore, is that you be imprisoned for one day, which period has already been exceeded, as you have been in custody since the commencement of the assizes." The grave irony of the learned judge was felt to truly represent a state of things well-nigh intolerable, and a reform in the law of divorce was felt to be inevitable. The hour and the man came in 1857, the man in the person of Sir Richard Bethell, then Attorney-General.

[*It is in the effect of Law upon domestic life that the study of this subject possesses a universal and vital interest. The Tenth Edition contains numerous articles upon such domestic legal enactments. See* WOMEN, MARRIAGE, INFANTS, CONTRACT.]

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THE WAYS AND MEANS OF JUSTICE.

From the Article (8 pages) by SIR JOHN SCOTT, *K.C.M.G., D.C.L., formerly Judicial Adviser to the Khedive of Egypt.*

Criminal Law.— . . . . . . Crime is in England treated locally; the responsibility for the suppression of it is local. Formerly each township was responsible for the suppression of crime within its own boundaries. The "view of frank pledge" which gave effect to this has long since disappeared, but the system of each township having a headborough or constable still survives in a few places. In each county the sheriff was, and in law still is, responsible for the peace of the county, and he had control of the county jail, in which he lodged the prisoners he arrested as suspected of crime. In ancient times the freeholders of the county sat, with the sheriff presiding, to inquire into and punish the crime in the county. The Sheriff's Criminal Court, being superseded by the Assizes and Quarter Sessions, was long ago abolished, but the tribunal at the Assizes for the trial of crimes is still furnished by the freeholders of the county, acting as jurymen under the direction of the judge. The jury must come from the vicinage or neighbourhood. The judges, who used to be sent on a commission of jail delivery and "*oyer* and *terminer*" from Westminster, are now from the Royal Courts of Justice, and not from Westminster. In olden days, and even now in theory, the Grand Jury inquire of their own knowledge, by the oath of good and lawful men of the neighbourhood, into the crime of the county, but in practice the charges against the accused persons are always submitted to an officer known as the Clerk of the Crown. . . . .

"View of frank pledge."

. . . .

The following comparative tables of judicial salaries in England and France speak for themselves:—

England—	
Lord Chancellor	£10,000
Lord Chief Justice of England	8,000
(4) Lords of Appeal, each	6,000
Master of the Rolls	6,000
(5) Lord Justices, each	5,000
(23) Judges of the High Court, each	5,000
Recorder of London	4,000
Common Serjeant	3,000
Assistant Judges, each	1,500
Judge (City of London Court)	2,400
(56) County Court Judges, each	1,500
(11) Metropolitan County Court Judges, each	1,500
Other Metropolitan Police Magistrates, each	1,500
Bow Street Police Magistrate	1,800
France—	
President of the Court of Cassation	1,200
(3) Presidents of Chambers of the Court of Cassation, each	1,000
(45) Judges of the Court of Cassation, each	720
(1) President (at Paris) of the Court of Appeal	1,000
(25) Presidents of other Courts of Appeal, each	720
(59) Presidents of Chambers of Courts of Appeal—	
(9) at Paris, each	550
(50) in Provinces, each	400
(359) Presidents of Tribunals of 1st Instance—	
(1) at Paris	800
(15) 1st Class, each	400
(76) 2nd Class "	280
(267) 3rd Class "	200
(633) Judges—	
(48) Paris, each	320
(77) 1st Class, each	240
(175) 2nd Class each	£160
(335) 3rd Class "	120
Tribunals of the Juge de Paix.	
Judges number 2872—	
20 receive, each	320
43 " "	200
754 " " salaries varying from	140 to 84
2055 " "	72
Ministère Publique (Public Prosecutor's Department).	
Chief Public Prosecutor	1200
His Advocate-General in Cour de Cassation	720
(26) Public Prosecutors in Court of Appeal—	
(1) Paris	1000
(25) in Provinces, each	720

[*Not only in its legal aspect does the subject of Crime receive the fullest treatment, as may be seen from the Article on* CRIMINAL LAW, *but the most modern attitudes of thought on Crime are reflected in Articles like* PRISON DISCIPLINE (5 *pages*), INSANITY (25 *pages*), LOMBROSO, *&c., &c.*]

TITLES IN LAND.

From the Article (5 pages) by C. FORTESCUE BRICKDALE, *Author of "Registration of Deeds in the County of Middlesex," "Registration of Title to Land," &c.*

Land Registration. . . . . . . *England and Wales.*—In England and Wales land registration is as yet (1902) only partially established. Since the time of Queen Anne deed registries have existed in Middlesex and Yorkshire, and under Lord Halsbury's Land Transfer Act of 1897 considerable progress has been made in compiling a register of title in the county of London, but it will probably be some years before this measure will have attained its full effect. The Act of 1897, § 20, provides the means of gradually extending the system throughout the country on the initiative of the County Councils. The first attempt to introduce general registration of conveyances appears to have been made by the Statute of Enrolments, passed in the 27th year of Henry VIII. But this was soon found to be capable of evasion, and it became a dead letter. A Registration Act applying to the counties of Lancaster, Chester, and Durham was passed in Queen Elizabeth's reign, but failed for want of providing the necessary machinery for its own observance. The subject reappeared in several Bills during the Commonwealth, but these failed to pass, owing, it would seem, to the objection of landowners to publicity. In 1669 a committee of the House of Lords reported that one cause of the depreciation of landed property was the uncertainty of titles, and proposed registration of deeds as a remedy, but nothing was done.

During the next thirty years numerous pamphlets for and against a general registry were published. In 1704 the first Deed Registry Act was passed, applying to the West Riding of Yorkshire. In 1707 the system was extended to the East Riding, and in 1708 to Middlesex. These Middlesex and Yorkshire registries remain in operation to the present day, and are greatly valued by the smaller proprietors and mortgagees, owing to the security against fraud which they provide at a trifling cost. The selection of these counties seems capricious: its probable explanation is that in them trade was flourishing, and the fortunes made were frequently invested in land, and a protection against secret encumbrances was most in demand. In 1728 and 1732 Surrey and Derby petitioned, unsuccessfully, for local registries. In 1735 the North Riding Deed Registry Act was passed. In 1739 a General Registry Bill passed the Commons, but did not reach the Lords. . . . .

The Article on GOLDSMITH in Vol. 10 is by Lord Macaulay.

For a rapid guide to the explanation of the Doctrine of Cy-près see the Index of the Tenth Edition under the entry Cy-près

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For the titles of some of the articles devoted to Engineering, see p. 220.

. . . . In 1875 Lord Cairns's Land Transfer Act of that year was passed, which was much the same as the former Bill, but without compulsion. This Act had no better success than the Act of 1862, but as its adoption has since been made compulsory, its provisions are important. Its most noticeable feature, from a practical point of view, is the additional prominence given to an expedient called "Possessory" registration (which also existed under another name in Lord Westbury's Act), whereby is removed the great initial difficulty of placing titles on the register in the first instance. Two sorts of registration were established, "Absolute" and "Possessory." The effect of an absolute registration was immediately to destroy all claims adverse to the registered title. But this was only to be granted on a regular investigation of title, which, though not so strict as under the former Act, yet necessarily involved a certain amount of time and cost. Possessory registration, on the other hand, was to be granted to any one who could show a *primâ facie* title—a quick and cheap process. But the effect of such registration would not be immediately felt. It would not destroy existing claims. It would only prevent new difficulties from arising. In course of time such a title would be practically as good as an absolute one. In 1885 the duke of Marlborough introduced a Bill for a registry of titles, and in the following vacation Lord Davey wrote three letters to *The Times* advocating the same thing on the general lines afterwards adopted. In 1887 Lord Halsbury, by introducing his Land Transfer Bill, commenced a struggle with the opponents of reform, which, after ten years of almost continuous effort, resulted in the passing of his Act of 1897, establishing compulsory registration of title. . . . .

. . . .

Under the operation of this Act, at the expense of a somewhat increased cost on all transactions during a few years, persons dealing with land in the county will ultimately experience great relief in the matter both of costs and of delay. Mortgagees will also be protected (vol. xxx. p. 130) from risks of fraud, which at present are very appreciable, and of which the Redgrave case is a recent example. . . . .

[*The lives of* Lord CAMPBELL, Lord WESTBURY, Lord CAIRNS, Lord SELBORNE, *and* Lord HALSBURY *are the subjects of special articles in the Tenth Edition.*]

DEEDS.

From the Article (42 pages) by S. WADSWORTH, *M.A., Barrister-at-Law.*

Conveyancing.— . . . . . The common mode of conveying a freehold is now, as already mentioned, by ordinary deed, called in this case *an indenture*, from the old practice, where a deed was made between two or more parties, of writing copies upon the same parchment and then dividing it by an indented or toothed line. Indenting is, however, not necessary, and in modern practice is disused. A deed derives its efficacy from its being sealed and delivered. It is still a matter of doubt whether signing is essential. It is not necessary that its execution should be attested except in special circumstances, as, *e.g.*, where made under a power requiring the instrument exercising it to be attested. But in practice conveyances are not only sealed, but also signed and attested by one or two witnesses. The details of a conveyance in any particular case depend upon the subject-matter and terms of the sale, and the state of the title as appearing by the abstract. The framework, however, of an ordinary purchase-deed consists of (1) the date and parties, (2) the recitals, (3) the testatum or witnessing-part, containing the statement of the consideration for the sale, the words incorporating covenants for title, and the operative words, (4) the parcels or description of the property, (5) the habendum, showing the estate or interest to be taken by the purchaser, and (6) any provisos or covenants that may be required. A few words will illustrate the object and effect of these component parts. . . . .

[*Articles on kindred subjects are to be found under* REAL ESTATE, DEEDS, SETTLEMENTS, *and numerous other headings.*]

ENGLISH LAW OF TENURE.

From the Article (4 pages) by A. WOOD RENTON, *Puisne Judge of Mauritius.*

Landlord and Tenant.— . . . . . . The relationship of landlord and tenant is constituted by a lease, or an agreement for a lease, by assignment, by attornment, and by estoppel. And first of a lease and an agreement for a lease. All kinds of interests and property, whether corporeal, such as lands or buildings, or incorporeal, such as rights of common or of way, may be let. The Benefices Act, 1898, however, now prohibits the grant of a lease of an advowson. Titles of honour, offices of trust or relating to the administration of justice, and pensions granted by the Crown for military services, are also inalienable. Generally speaking, any person may grant or take a lease. But to this rule there are a number of common law and statutory qualifications and exceptions. A lease by or to an infant is voidable at his option. But extensive powers of leasing the property of infants have been created by the Settled Estates Act, 1877, and the Settled Land Act, 1882. A person of unsound mind can grant or take a lease if he is capable of contracting (see INSANITY, *Legal*). Leases may be made on behalf of lunatics who are subject to the jurisdiction in lunacy under the provisions of the Lunacy Act, 1890, and the Settled Land Act, 1882. A married woman can lease her "separate property" apart from or under the Married Women's Property Acts, as if she were a single woman (*femme sole*). As regards other property, the concurrence of her husband is generally necessary. An alien was at common law incapable of being either a lessor or a lessee. But this disqualification is removed by the Naturalization Act, 1870. The right to deal with the property of a convict while he is undergoing sentence (but not while he is out of prison on leave) is, by the Forfeiture Act, 1870, vested in his administrator. Leases by or to corporations must be by deed under their common seal, and the leasing powers of ecclesiastical corporations in particular are subject to complicated statutory restrictions which cannot here be examined. Powers of granting building and other leases have been conferred by modern legislation on municipal corporations and other local authorities. . . .

. . . .

Reference may be made, in conclusion, to a few modern statutes which have affected the law of landlord and tenant. The Agricultural Holdings Acts 1883 (which repeals the Agricultural Holdings Act, 1875) and 1900, give to the agricultural tenant a right to compensation for (i.) certain specified improvements made by him with the landlord's previous consent in writing; and (ii.) certain other classes of improvements although the landlord's consent has not been obtained. . . . .

[*The subject of this extract is further dealt with under* FEUDALISM, ALIEN, INTERNATIONAL LAW, FREEHOLD ESTATE, *&c.*]

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"Such topics as 'Labour Legislation,' 'Landlord and Tenant,' 'Land Registration,' and 'Lien,' force themselves upon the attention of the ordinary citizen, not only when he is engaged in litigation—when, indeed, if he is wise, he will not content himself with self-instruction—but as enabling him to understand the controversies that are going on around him, and to enable him to take an intelligent interest in the work of the world."—(From LORD HALSBURY's review of Volume 80 of the Tenth Edition in *The Times*, 24th October 1902.)

DEBTOR AND CREDITOR.

From the Article (9½ pages) by J. SMITH, C.B., Inspector-General in Bankruptcy.

Bankruptcy.— . . . . . . For the convenience of readers who may require more detailed information, the accompanying summary of the leading provisions of the law relating to bankruptcy procedure is submitted. . . . .

. . . .

The "Deeds of Arrangement Act, 1887," although not falling strictly within the scope of the bankruptcy law, may also, in consequence of its important bearing upon the question of insolvency in England and Wales, be here noticed. It has been pointed out that, under the Bankruptcy Acts of 1849 and 1861, non-official arrangements by deed between a debtor and the general body of his creditors were not only officially recognized, but were in certain circumstances made binding on all the creditors, including those who refused to assent to them. Under the Act of 1869, although such deeds were no longer recognized or made binding on non-assenting creditors, the proceedings under the "liquidation by arrangement" and "composition" clauses were practically private arrangements by resolution instead of deed, and were proved by experience to be open to the same abuses. It has also been shown that under the Act of 1883 no arrangements either by deed or by resolution have any force against dissenting creditors, unless confirmed after full investigation and approval by the bankruptcy courts. Private arrangements, therefore, cease to form any part of the bankruptcy system. But they are, nevertheless, binding as contracts between the debtor and such creditors as assent to them. Being, however, in the nature of assignments of the debtor's property, they are either deemed fraudulent if the benefit of the assignment is limited to a portion of the creditors, or, if it is extended to all they become acts of bankruptcy, and, like any other voluntary assignment, are liable to be invalidated if made within three months prior to the petition on which a receiving order is made against the debtor. Treated as voluntary assignments, which are not binding on those who do not assent to them, such arrangements, where honestly entered into and carried out by capable administration, in many cases form a useful and expeditious method of liquidating a debtor's affairs, and where the debtor's insolvency has been brought about without any gross misconduct they will probably always be largely resorted to. The danger attending them is that even in cases where the debtor has been guilty of misconduct, a private arrangement may be used to screen his conduct from investigation, while in many cases it may be made the medium for the concealment of fraudulent preferences. The absence of any independent audit of the trustees' accounts may also encourage or conceal irregularities in administration. Previous to 1887, however, much inconvenience arose from the fact that the execution of these private arrangements was frequently kept secret, and fresh credit was obtained by the debtor without any opportunity being afforded for the new creditors becoming acquainted with the fact that they were dealing with an insolvent person, and that in many cases they were simply supplying the means for meeting part obligations in respect of which the debtor had committed default. The "Deeds of Arrangement Act, 1887," was therefore passed to compel the disclosure of such arrangements, by declaring them void unless registered within seven days after the first execution by the debtor or by any creditor. . .

Deeds of arrangement.

[*Articles on the* LAW OF BANKING, COMPANY LAW, PATENTS, PARTNERSHIP, TRADE MARKS, TRUST COMPANIES, *and the many branches of legal knowledge bearing directly on commerce, are to be found in the Tenth Edition.*]

A CREDITOR'S PRIVILEGES.

From the Article (5½ pages) by His Honour Judge FRANCIS WILLIAM RAIKES, LL.D., K.C.

Lien.— . . . . . . A general lien is a right of a creditor to retain property, not merely for charges relating to it specifically, but for debts due on a general account. This not being a common-law right, is viewed by the English courts with the greatest jealousy, and to be enforced must be strictly proved. This can be done by proof either of an express or implied contract or of a general usage of trade. The first of these is established by the ordinary methods or by previous dealings between the parties on such terms; the second is recognized in certain businesses, and it would probably be exceedingly difficult, if not impossible, to extend it at the present time to any other trades. When, however, a lien by general usage has once been judicially established, it becomes part of the Law Merchant, and the courts are bound to recognize and enforce it. The best known and most important instance is the right of a solicitor to retain papers in his hands belonging to his client until his account is settled. The solicitor's lien, though probably more commonly enforced than any other, is of no great antiquity in English law, the earliest reported case of it being in the reign of James II.; but it is now of a twofold nature. In the first place there is the retaining lien. This is similar in kind to other possessory liens, but of a general nature attaching to all papers of the client, and even to his money, up to

For some of the titles of articles on subjects of Social and Political interest, see p 156 of this review.

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the amount of the solicitor's bill, in the hands of the solicitor in the ordinary course of business. There are certain exceptions which seem to have crept in for the same reason as the solicitor's lien itself, *i.e.*, general convenience of litigation; such exceptions are the will of the client after his decease, and proceedings in bankruptcy. In this latter case the actual possessory lien is given up, the solicitor's interests and priorities being protected by the courts, and it may be said that the giving up the papers is really only a means of enforcing the lien they give in the bankruptcy proceedings. In the second place there is what is called a charging lien—more correctly classed under the head of equitable lien, since it does not require possession, but is a lien the solicitor holds over property recovered or preserved for his client. He had the lien on an order by the court upon a fund in court by the common law, but as to property generally it was only given by 23 and 24 Vict. c. 127, § 28; and it has been held to attach to property recovered in a probate action (*ex parte* Tweed, C. A. 1899, 2 Q.B. 167). A banker's lien is the right of a banker to retain securities belonging to his customer for money due on a general balance. Other general liens, which have been judicially established, are those of wharfingers, brokers, and factors (which are in their nature akin to those of solicitors and bankers), and of calico printers, packers of goods, fullers (at all events at Exeter), dyers, and millers; but in all these special trades it is probable that the true reason is that the account due was for one continuous transaction. The calico would come to be printed, the goods to be packed, the cloth to be bleached, the silk to be dyed, and the corn to be ground, in separate parcels, it is true, and at different times, but all as one undertaking; and they are therefore, though spoken of as instances of general lien, only adaptations by the courts of the doctrine of particular lien to special peculiarities of business. In none of these cases would the lien exist, in the absence of special agreement, for other matters of account, such as money lent or goods sold. . . . .

[*BANKING, GUARANTEE, SOLICITOR, CONTRACT, DEBT, SALVAGE, and all means by which a lien is acquired, are treated each in a separate article.*]

Sir Archibald Milman, K.C.B., writes on Parliament in Vol. 31.

LIABILITY OF THIRD PERSONS.

From the Article (4 pages) by H. A. de COLYAR, Barrister-at-Law, author of "The Law of Guarantees and of Principal and Surety."

Guarantee.— . . . . . . In English law, a guarantee is a contract to answer for the payment of some debt, or the performance of some duty, by a third person who is *primarily* liable to such payment or performance. It is a *collateral* contract, which does not extinguish the original liability or obligation to which it is accessory, but on the contrary is itself rendered null and void should the latter fail, as without a principal there can be no accessory. The liabilities of a surety are in law dependent upon those of the principal debtor, and when the latter cease the former do so likewise (*per* Collins, L.J., in *Stacey* v. *Hill*, 1901, 1 K.B., at p. 666). If, therefore, persons wrongly suppose that a third person is liable to one of them, and a guarantee is given on that erroneous supposition, it is invalid *ab initio*, by virtue of the *lex contractûs*, because its foundation (which was that another was taken to be liable) has failed (*per* Wills, J., in *Mountstephen* v. *Lakeman*, L.R., 7 Q.B., p. 202). . . . .

[*There is no legal subject of general interest to the layman which is not dealt with and explained in the Encyclopædia Britannica.*]

POLITICAL OFFENCES.

From the Article by J. E. P. WALLIS, M.A., Advocate-General of Madras, formerly Editor "State Trials."

Extradition.— . . . . . . The question as to what constitutes a political offence is one of some nicety. It was discussed in *In re* Castioni (1890, 1 Q.B. 149), where it was held, following the opinion of Mr Justice Stephen in his *History of the Criminal Law*, that to give an offence a political character it must be "incidental to and form part of political disturbances." Extradition was accordingly refused for homicide committed in the course of an armed rising against the constituted authorities. In the more recent case of *In re* Meunier (1894, 2 Q.B. 415), an Anarchist was charged with causing two explosions in Paris—one at the Café Véry resulting in the death of two persons, and the other at certain barracks. It was not contended that the outrage at the Café was a political crime, but it was argued that the explosion at the barracks came within the description. The Court, however, held that to constitute a political offence there must be two or more parties in the state, each seeking to impose a government of its own choice on the other, which was not the case with regard to Anarchist crimes. The party of anarchy was the enemy of all governments, and its effects were directed primarily against the general body of citizens. The test applied in the earlier case is perhaps the more satisfactory of the two.

Political offences.

With regard to the provision that surrender shall not be granted if the requisition has in fact been made with a view to try and punish for an offence of a political character, it was decided in the recent case of Arton (1896, 1 Q.B. 108) that a mere suggestion, that after his surrender for a non-political crime, the prisoner would be interrogated on political matters (his alleged complicity in the Panama scandal), and punished for his refusal to answer, was not enough to bring him within the provision. The Court also held that it had no jurisdiction to entertain a suggestion that the request of the French Government for his extradition was not made in good faith and in the interests of justice. . . . .

[*INTERNATIONAL LAW, CRIMINAL LAW, FRAUD, TREASON, and other Articles give fullest particulars of those offences for which Extradition can be successfully claimed.*]

THOSE WHO MAY DEFY THE LAW.

From the Article by THOMAS BARCLAY, LL.B., Ph.D., sometime Examiner in International Law to the University of Oxford.

Exterritoriality.— . . . . . . "The ground upon which the immunity of sovereign rulers from process in our courts," said Mr Justice Wills in the case of Mighell *v.* Sultan of Johore, 1894, "is recognized by our law, is that it would be absolutely inconsistent with the status of an independent sovereign that he should be subject to the process of a foreign tribunal, unless he deliberately submits to its jurisdiction." It has, however, been held where the foreign sovereign was also a British subject (Duke of Brunswick *v.* King of Hanover, 1844), that he is amenable to the jurisdiction of the English Courts in respect of transactions done by him in his capacity as a subject. A "foreign sovereign" may be taken to include the President of a Republic, and even a potentate whose independence is not complete. . . . . . . The immunity of a foreign diplomatic agent, as

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the direct representative of a foreign sovereign (or state), is based on the same grounds as that of the sovereign authority itself. The international practice in the case of Great Britain was confirmed by an Act of Parliament of the reign of Queen Anne, which is still in force. The preamble to this Act states that "turbulent and disorderly persons in a most outrageous manner" had insulted the person of the then Ambassador of his Czarish Majesty, Emperor of Great Russia," by arresting and detaining him in custody for several hours, "in contempt to the protection granted by Her Majesty, contrary to the law of nations, and in prejudice of the rights and privileges which Ambassadors and other public Ministers, authorized and received as such, have at all times been thereby possessed of, and ought to be kept sacred and inviolable." This preamble has been repeatedly held by our Courts to be declaratory of the English common law. . . . . . .

[The rights and privileges of Ambassadors are described at length in the Article AMBASSADOR.]

MASTER AND SERVANT.

From the Article (5 pages) by MAURICE HILL, *Barrister-at-Law.*

Employers' Liability.—The law of England as to the liability of employers in respect of personal injuries to their servants can only be regarded as in a stage of transition. . . . . . Some servants are practically insured against accident, others serve almost at their own risk, and no logical reason can be discovered for the difference. The common law, indeed, is definite enough, and in its strict limitation of a master's obligations admits of little ambiguity; but by the Employers' Liability Act, 1880, such exceptions have been grafted upon the common law, and by the Workmen's Compensation Act, 1897, principles so alien to the common law have been applied to some but not to all employments, that it is impossible now to present any view of this branch of the law as a logical whole. All that can be done is to state the nature of the liability at common law, the extension of it effected by the Employers' Liability Act, 1880, and the new liabilities introduced by the Acts of 1897 and 1900. It is necessary to bear in mind that while all servants have such rights as the common law gives them, and most may have the further rights conferred by the Act of 1880, some in certain specially favoured employments are also entitled to the peculiar benefits of the Workmen's Compensation Act.

. . . .

The Act of 1900. By the Workmen's Compensation Act, 1900, the benefits of the Act of 1897 were, after the 1st July 1901, extended to some workmen in agriculture. To come within the Act, the workman must be employed in agriculture by an employer who habitually employs one or more workmen in such employment. "Agriculture" includes horticulture, forestry, and the use of land for any purpose of husbandry, inclusive of the keeping or breeding of live stock, poultry, or bees, and the growing of fruit and vegetables. If a workman is employed by the same employer mainly in agricultural, but partly or occasionally in other work, the Act applies to the employment of the workman in such other work. . . . . .

[LABOUR LEGISLATION, NEGLIGENCE, TORTS, CHILDREN (CRUELTY TO), AGENT, *are but a few of the headings under which will be found important facts concerning Employers' Liability.*]

PROTECTION OF SHOP ASSISTANTS.

From the Article (16 pages) by Miss A. M. ANDERSON, *Principal Lady Inspector of Factories, Home Office.*

Labour Legislation.— . . . . In four brief Acts, 1892 to 1899, the first very limited steps have been taken towards the regulation of the employment of shop assistants. In place of such general codes as apply to factories, laundries, mines—touching security, hygiene, limitation of daily periods, provision for holidays, &c.—only three kinds of protective requirement are binding on employers of shop assistants: (1) Limitation of the weekly total of hours of work of persons under eighteen years of age to seventy-four inclusive of meal-times; (2) prohibition of the employment of such persons in a shop on the same day that they have, to the knowledge of the employer, been employed in any factory or workshop for a longer period than would, in both classes of employment together, amount to the number of hours permitted to such persons in a factory or workshop; (3) provision for the supply of seats by the employer, in all rooms of a shop or other premises where goods are retailed to the public, for the use of female assistants employed in retailing the goods—the seats to be in the proportion of not fewer than one to every three female assistants. The first two of these requirements are contained in the Act of 1892, which also prescribed that a notice, referring to the provisions of the Act, and stating the number of hours in the week during which a young person may be lawfully employed in the shop, shall be kept exhibited by the employer; the third requirement was first provided by the Act of 1899. The two intervening Acts of 1893 and 1895 are merely supplementary to the Act of 1892; the former providing for the salaries and expenses of the inspectors which the council of any county or borough (and in the City of London the Common Council) were empowered by the Act of 1892 to appoint for the execution of the Act; the latter providing a penalty of forty shillings for failure of an employer to keep exhibited the notice of the provisions of the Acts . . . .

[For interesting details of the daily lives of the working classes, see Article of 20 pages on SOCIAL PROGRESS.]

THE LAW COURTS.

From the Article by Lord DAVEY, *F.R.S., Lord of Appeal in Ordinary.*

Law. . . . . . . The outward and visible sign of the passing of the old order was given when the judges left their historical home in Westminster Hall for the new Palace of Justice in the Strand in the year 1882, and law and equity forgathered under one roof. Vast as it is, the new building is not adequate for the accommodation of all its inmates, and a judge in 1902 still sat in old Lincoln's Inn Hall. At the time of the opening of the new courts it was remarked that those who were responsible for their arrangement had apparently forgotten that the Court of Appeal sat in two divisions. There is a large hall which leads nowhere, and is as silent and deserted as Westminster Hall itself. The corridors are dark and narrow. The accommodation for counsel in the courts is confined and inconvenient, and the furniture is bare and mean. There is no room in which counsel can wait for their cases to be called on except the library, which is upstairs and unfitted for the purpose. The accommodation for the judges, on the other hand, is excellent. . .

Royal Courts of Justice.

[For particulars as to the judicial offices in England, see Articles CHANCELLOR, JUDGE, APPEAL, ATTORNEY-GENERAL, *&c., &c.*]

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DECEASED WIFE'S SISTER BILL.

From the Article (5 pages) by THOMAS BARCLAY *and* W. F. WILCOX.

Marriage. . . . . . . In spite of active and ceaseless agitation on behalf of the legalization in England of marriage with a deceased wife's sister, the advocates of the abolition of the existing disability had not succeeded up to 1902 in carrying any measure for its removal through both Houses of Parliament. In all the self-governing colonies, on the other hand, with the exception of Newfoundland, the restriction has ceased to exist. The first Act legalizing marriage with a deceased wife's sister was adopted by South Australia. The royal assent, however, was not given till the Parliament of that state had five times passed the Bill. In quick succession similar statutes followed in Victoria, Tasmania, New South Wales, Queensland, New Zealand, West Australia, Barbados, Canada, Mauritius, Natal, and Cape Colony. As regards the Channel Islands, marriages of the kind in question were made legal some years ago in Jersey, but neither in the other islands, nor in the Isle of Man, has similar progress been made.

Marriage with a deceased wife's sister.

In England the Bill to render marriage with a deceased wife's sister valid was first adopted by the House of Commons in 1850, and rejected by the House of Lords in 1851. It was subsequently brought before the legislature in 1855, 1856, 1858, 1859, 1861, 1862, 1866, 1869, 1870, 1871, 1872, 1873, 1875, 1877 and 1878 (Colonial Bills), 1879 (6th May, when in the House of Lords the prince of Wales and the duke of Edinburgh voted in favour of it), 1880, 1882, 1883, 1884, 1886, 1888, 1889, 1890, 1891, 1896, and 1898 and 1900 (Colonial Bills). In most cases it has been passed by the House of Commons and rejected in the House of Lords. In fact, few subjects have such power of exciting interest among the Peers as the Marriage with a Deceased Wife's Sister Bill. It was observed that they mustered to deal with it as if the destiny of the nation depended on its rejection. . . . .

[*No better or clearer account of the modern position of women could be read than the eight-page Article* WOMEN, *by* Lady JEUNE.]

CAPITAL AND LABOUR.

From the Article by Hon. CARROLL D. WRIGHT, *Ph.D., LL.D., U.S. Commissioner of Labour.*

Strikes and Lockouts. . . . . . . For damages flowing from any of these criminal acts, as from any actionable wrong not amounting to a crime, the strikers guilty of them will be civilly liable at the suit of the employer or other person injured. And employers have in recent years frequently had recourse to injunction as a ready remedy to restrain strikers, especially in order to stop illegal picketing. The extent to which strikers may render themselves liable to an action for damages by conduct aimed at bringing indirect pressure to bear upon the employer has been the subject of judicial consideration in several recent cases, and the law cannot yet be regarded as settled in any very definite manner. Picketing, except for the very limited purpose allowed by the Act of 1875, and the other acts aimed at by that Act, are means of such pressure which clearly give a cause of action to the party wronged. But apart from the statute, there are many forms of coercion which are actionable because a wrongful infringement of the liberty of others. The general principle is that every one, employer or workman, has a right to deal with other persons who are willing to deal with him, and that no one may interfere with that right by any form of *coercion*. . . . . . . Picketing is thus, apart from the statute, an actionable wrong. The publication of black lists is the same. To call out men who are willing to work for an employer is an infringement of the right of the employer and of the men. If the members of a trade union, in order to bring pressure to bear upon employer A, threaten employer B that unless he ceases to deal with A the union will call out B's men, it is a wrongful infringement of the right of A and B to deal with one another. All such forms of coercion, if they directly cause damage, will amount to actionable wrongs. An illustration may be seen in the case of Quinn *v.* Leathem in 1901. At one time the case of Allen *v.* Flood in the House of Lords (1898) seemed to place some important limitations on the civil liability of strikers. But the only general principle decided by that case was that an act lawful in itself is not converted by a malicious or bad motive into an unlawful act so as to make the doer of the act liable to a civil action. The question to be determined in every case will be not whether the strikers acted out of spite, but whether they infringed any legal right of the party complaining of their action. Wherever a legal right is infringed and damage follows, the motive of the act is immaterial except in so far as it may help to show that the damage caused was the natural result of the act done, and therefore not too remote to be actionable.

Until recently it was supposed that for wrongs committed in strikes only the individual wrongdoers could be made responsible. But the decision of the House of Lords in the Taff Vale Railway case (1901) has shown that a trade union can be sued in tort for acts done by its agents within the scope of their authority, and may be sued in its collective capacity, and execution of any damages recovered may be enforced against its general funds (see TRADE UNIONS). . . . .

[*The Article* LABOUR LEGISLATION (16 *pages*) *should be consulted as to the legal aspects of trade disputes and relations of employer and employed.*]

The only way to cultivate a general interest in the legal aspect of daily affairs is to have some work of reference which will enable us easily and rapidly to acquire broad facts of law. Proceedings in the Houses of Parliament, in the Law Courts, in the County Courts, in Borough Councils, in almost every form of public meeting, will be invested with a new interest for us if we understand the principles of law which they illustrate. Police reports are apt to furnish the uninitiated reader with misguided sensations unless he can test the conduct of the parties involved from a legal standpoint. Notice boards in public places are to most of us dull placards of meaningless letters, and our attention is too frequently drawn to them only after we have violated the rules laid down in them. Sometimes, again, they lack the authority to impose the rules in which we blindly acquiesce. The legal articles in the *Encyclopædia Britannica*, of which the above extracts are no more than detached clauses in a great national statute of morals, will give the reader an opportunity to study one of the most vital questions which have affected men of all times and in every station of life.

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YOU cannot have even glanced over the preceding pages devoted to extracts from the legal articles in the Tenth Edition without realizing that the *Encyclopædia Britannica* can claim to be a Law Library, wherein every important subject connected with this branch of knowledge receives the fullest attention. To help you to realize how true this is, glance over the four divisions of this page and notice how fully each aspect of Law, its history, its application to the Science of Government and Politics, its practical administration, and its expounders and celebrated administrators is treated :—

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HOW TO USE THE INDEX.

THE 26,000 articles in the *Encyclopædia Britannica* constitute 26,000 pigeon-holes in which the whole sum of human knowledge is filed away for convenient reference. But this is not all that has been done for the convenience of the reader; if it were all there would still be something left to be desired. Some among these 26,000 pigeon-holes are so large, and contain so many items of information, that if no further sub-division were made the possessor of the *Encyclopædia* might lose time in looking through the contents of a large pigeon-hole in order to find the one item of which he was in search. Again, it is quite possible that he may be at a loss to know in which pigeon-hole he ought to search. In order to do away with this inconvenience the contents of the *Encyclopædia Britannica* have as a matter of fact been classified twice over. The first classification is that already indicated—the division of all knowledge into 26,000 pigeon-holes. The 26,000 pigeon-holes are left undisturbed, so that a reader who wants to grasp the whole of any one of the 26,000 subjects may conveniently do so. Then another copy of the *Encyclopædia* is taken, so to speak, and instead of being divided into 26,000 large pigeon-holes, is divided into some 600,000 small pigeon-holes. This result has been attained by making the most elaborate and minute index which has ever been compiled. This index, which forms a volume by itself, in no way obstructs the use of the *Encyclopædia* upon such occasions as make it expedient that a man should have laid before him all the contents of one of the 26,000 large pigeon-holes, but it is of enormous utility to the same man who, at another moment, instead of desiring to have laid before him one-twenty-six-thousandth part of the world's knowledge, desires, as quickly as possible, to find his way to a special item of information which constitutes only one-six-hundred-thousandth part of the sum-total. In order that the distinction between these two sorts of services which the *Encyclopædia Britannica* renders to its possessor may be clearly defined, one should consider for a moment the distinction between an encyclopædia and a dictionary. The dictionary plan presents the marked advantage that the reader who desires to find only one isolated item of information finds it without a moment's delay in its alphabetical place. But the encyclopædia plan presents an advantage generally recognized as being even more important, in that a complete treatise upon any subject is infinitely more agreeable to read, and infinitely more easy to apprehend, than an isolated statement of fact unsupported and unexplained by its natural context. And the *Encyclopædia Britannica* is, from this point of view, a library of 26,000 books, some large and some small; but if a man does not know to which one of the 26,000 books he should turn, or does not know to which precise page of any one of them he should turn, the index in a moment transforms his library into a dictionary. Take, for instance, the article "Anatomy." It describes every part of the human body, and fills a hundred pages, so that it is really a book in itself—a complete treatise on Anatomy, by the study of which a man can learn all there is to learn about the subject. But the various parts of the article are minutely indicated by some 2000 index entries, so that the reader may at once turn to any especial part of the article which he desires to consult.

This Index, immense as it is, has been compiled on a plan so simple that reference to its innumerable departments may be made with the greatest ease. One example will suffice for the clear understanding of the method to be employed in finding an item of information. Suppose you wish to know about capstans. You turn to the entry:

Capstan 5 78a.

Five is the number of the volume, seventy-eight the number of the page, and *a* the first quarter of the page, which for the purposes of indexing has been treated as consisting of the four quarters *a*, *b*, *c*, and *d*.

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THE COLONIES

"I may be considered, perhaps, to be a dreamer, or too enthusiastic, but I do not hesitate to say that, in my opinion, the political federation of the Empire is within the limits of possibility."—JOSEPH CHAMBERLAIN.

RECENT experiences have quickened every Englishman's interest in the colonies and in colonial problems, for the comprehension of which the Encyclopædia Britannica is an invaluable work of reference. It is hardly credible, and yet it is true, that a great many people needed the pageant of colonial officials from all quarters of the globe, and the gallant sacrifice of colonial lives in the field, to bring home to them the existence of a force in the politics of the British Empire probably greater than any other that has yet been illustrated by the course of history in the annals of parliamentary government.

In a matter of such vital and imminent interest it may well be expected that the Tenth Edition should be fully equipped, and the following brief extracts dealing with the colonies are but a most imperfect outline of that great map of information which will amply repay study within the Thirty-five Volumes of the work itself.

THE KERNEL OF THE COLONIAL PROBLEM.

From the Prefatory Essay (13 pages) to Volume 26 by EDWARD DICEY, C.B.

Imperialism.

. . . . . . The recognition of this plain truth, unwelcome as it may be, has strengthened the growth of the Imperialist movement, which, in England at any rate, has been the most remarkable feature of the fourth quarter of the 19th century. There is no need to have reached an advanced age in order to remember the time when the formation of a Federated British Empire was regarded as an idle dream of Utopia. Till the days of the fourth Lord Carnarvon, no statesman had ever come forward as the champion of Imperial Federation; and even the Minister under whose auspices the Dominion of Canada became an accomplished fact was looked upon by his contemporaries as an amateur politician. The idea that the union of the scattered colonies of Great Britain beyond the seas could ever come within the domain of practical politics had hitherto met with no support from the leading statesmen of the Victorian era, whether Liberal or Conservative. Federation never formed part of the programme of either party—of the Liberals even less, if possible, than of the Conservatives. Why this should have been the case is obvious enough. In former days the first practical step towards the creation of an Imperial Federation was deemed to be the establishment of a Customs Union, under which all parts of the British Dominions, wherever situated, or whatever might be the nationality of their inhabitants, should not only enjoy free trade with one another, but should be advantaged, as against foreign nations, by being subject to lower duties than those imposed on foreign traders. To take such a step, to however small an extent, was deemed an infraction of Free Trade principles; and up to a very recent period the theory that Free Trade was a system advantageous everywhere, at all times, and in all circumstances, was a cardinal tenet not only of the Manchester school, but of the whole Liberal party. Amongst the causes to which the progress of the Federation movement is due, the decline of popular faith in the universal application of Free Trade principles cannot fairly be overlooked. The chief cause, however, is beyond doubt the advance in the use of telegraphic communication. Any system of common government between the mother country and the British colonies, other than that of a vague dynastic union, was manifestly impossible so long as communication between the parent State and her offspring was a matter of weeks or months. Of course, notwithstanding all the improvements in railway and steamship communication, the mileage distance between the mother country and her colonies forms a grave difficulty in the way of any possible Federation; but this difficulty nowadays is insignificant compared with what it was in 1875. Thanks to submarine telegraphy, any event of public interest which occurs in Great Britain is known at once in every important colony. In the same way, the main incidents of colonial life are read and commented on at home almost simultaneously with their occurrence. The variations of public opinion in Great Britain and in all the self-governing colonies of Greater Britain are discussed simultaneously in every part of the British Empire. Joint administration conducted by telegraphy cannot, for various reasons, be ever as satisfactory as joint administration by oral methods and personal intercourse. Still, the former system of administration is conceivably possible, while the latter is at present manifestly impossible. What, however, is even more important than the increased facility of communication between all parts of the British Empire is the extent to which this facility of communication has tended to weld Great Britain

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and Greater Britain into one people, with common thoughts, common interests, and common ideas. All families which have relatives settled in the colonies must be aware that, though mutual affections might remain undiminished, the interest in each other's fortunes felt by the members of a family, residing some at home, some in the colonies, tended formerly to decrease with the lapse of years. But when the papers report every morning to every British town of importance in each quarter of the globe the news of what has passed on the preceding day, whether in the mother country or in her dominions beyond the four seas, the common interest in each other's doings and sayings, which binds together men of the same race and country, is far less liable than it was heretofore to diminish in strength. To a great extent the British race, whether at home or abroad, has, owing to the advance in telegraphy, become again one community, united by other ties besides those of a common language and a common ancestry. We have seen how this rapidity of communication works in practice by the experience of the South African War. It needs no saying that the war would not have excited the intense sympathy displayed by the Colonies if the defeats, victories, sufferings, and triumphs, not only of the British army, but of the Colonial contingents, had not been made known to them day by day in the order of their occurrence. We must not seem to undervalue the military assistance afforded by these contingents, if we regard as yet a more important result the way in which this assistance has tended to strengthen the influences which work for Imperial Federation. There are grave practical difficulties which attend the formation of any working scheme for carrying out the idea of the Federation of the British Empire. But it is a striking fact that, for the first time in British annals, this idea has commended itself to popular favour both at home and in the Colonies. . . . .

[*The above is a short extract from one of many Prefatory Essays to the Volumes contributed by such authorities as* Sir LESLIE STEPHEN, *K.C.B.;* BENJAMIN KIDD; AUGUSTINE BIRRELL, *K.C.;* FREDERICK GREENWOOD; KARL PEARSON, *F.R.S.;* the Rev. W. E. COLLINS, *M.A., Professor of Ecclesiastical History at King's College, London; and* Dr. HENRY SMITH WILLIAMS, *M.D., B.Sc. These essays will be found to be valuable introductions to the study of Recent Political Progress, the Influence of Modern Research in the Scope of World History, the Growth of Toleration, the application of the Doctrine of Evolution to Sociological Theory and Problems, Modern Conditions of Literary Production, the Influence of Commerce on International Conflicts, the Function of Science in the Modern State, and Methods and Results in Modern Theology.*]

WHAT THE COLONIAL EMPIRE MEANS.

From the Article (9 pages) by Miss FLORA SHAW.

The British Empire.— . . . . . . The Colonial empire—exclusive of the Transvaal and Orange River Colonies—comprises forty-three district governments. It is divided into colonies of three classes and dependencies; these, again, are in some instances associated for administrative purposes in federated groups. The three classes of colonies are Crown Colonies, Colonies possessing representative institutions but not responsible government, and Colonies possessing representative institutions and responsible government. In Crown Colonies the Crown has entire control of legislation, and the public officers are under the control of the Home Government. In representative Colonies the Crown has only a veto on legislation, but the Home Government retains control of the public officers. In responsible Colonies the Crown retains a veto upon legislation, but the Home Government has no control of any public officer except the Governor.

In Crown Colonies—with the exception of Gibraltar and St Helena, where laws may be made by the Governor alone—laws are made by the Governor with the concurrence of a council nominated by the Crown. In some Crown Colonies, chiefly those acquired by conquest or cession, the authority of this council rests wholly on the Crown; in others, chiefly those acquired by settlement, the council is created by the Crown under the authority of local or Imperial laws. The Crown council of Ceylon may be cited as an example of the first kind, and the Crown council of Jamaica of the second.

In colonies possessing representative institutions without responsible government, the Crown cannot (generally) legislate by Order in Council, and laws are made by the Governor with the concurrence of the legislative body or bodies, one at least of these bodies, in cases where a second chamber exists, possessing a preponderance of elected representatives. The Bahamas, Barbados, and Bermuda have two legislative bodies—one elected and one nominated by the Crown; Malta and the Leeward Islands have but one, which is partly elected and partly nominated.

Under responsible government legislation is carried on by parliamentary means exactly as at home, with a cabinet responsible to parliament, the Crown reserving only a right of veto which is exercised at the discretion of the Governor in the case of certain Bills. The executive councils in those colonies, designated as at home by parliamentary choice, are appointed by the Governor alone, and the other public officers only nominally by the Governor on the advice of his executive council.

Colonial governors are classed as governors-general; governors; lieut.-governors; administrators; high commissioners; and commissioners, according to the status of the colony and dependency, or group of colonies and dependencies, over which they preside. Their powers vary according to the position which they occupy. In all cases they represent the authority of the Crown.

As a consequence of this organization the finance of Crown Colonies is under the direct control of the Imperial Government; the finance of representative Colonies, though not directly controlled, is usually influenced in important departures by the opinion of the Imperial Government. In responsible Colonies the finance is entirely under local control, and the Imperial Government is dissociated from either moral or material responsibility for colonial debts.

The total revenue, expenditure, and trade of the Colonial empire for 1900 were as follows :—

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Revenue	£58,815,700
Expenditure	56,563,660
Imports	181,846,110
Exports	192,330,040

In federated groups of colonies and dependencies matters which are of common interest to a given number of separate governments are by mutual consent of the federating communities adjudged to the authority of a common government, which, in the case of self-governing colonies, is voluntarily created for the purpose. The associated states form under the federal government one federal body, but the parts retain control of local matters, and exercise all their original rights of government in regard to these. The advantages of united action are thus secured for larger questions without impairing the vigour of independent initiative in matters of individual concern. The two great self-governing groups of federated colonies within the empire are the Dominion of Canada and the Commonwealth of Australia. India, of which the associated provinces are under the control of the central Government, may be given as an example of the practical federation of dependencies. Examples of federated Crown Colonies and lesser dependencies are to be found in the Leeward Island group of the West Indies and the federated Malay States.

This rough system of self-government for the empire has been evolved not without some strain and friction, by the recognition through the vicissitudes of three hundred years of the value of independent initiative in the development of young countries. Queen Elizabeth's first patent to Sir Walter Raleigh permitted British subjects to accompany him to America, "with guarantee of a continuance of the enjoyment of all the rights which her subjects enjoyed at home." . . . .

FROM THE HIMALAYAS TO CAPE COMORIN.

From the Articles (*123 pages*) *on* INDIA *by* Sir W. W. HUNTER, *LL.D., C.I.E.,* Sir AUCKLAND COLVIN, *K.C.S.I., K.C.M.G., C.I.E.,* Sir ALFRED COMYN LYALL, *K.C.B., G.C.I.E., and* JAS. SUTHERLAND COTTON, *M.A.*

THE LAST FORTY YEARS.

India.— . . . . . From 1860 to 1900 what changes! what advance! Every year adds to the number of Indians who flock to British colleges or to the Inns of Court. The iron bands of caste, of custom, and of spiritual authority are more and more relaxing. The sanctions and the penalties by which Hindu society was regulated are gradually but surely falling into disuse, and as yet there is no new system to replace them. Slowly (and better therefore if slowly) an ancient creed is nodding to its fall. It is the story of the sleeping Princess. For long ages India has slumbered immovable, but at length the spell is broken. From the far West has come the awakening. Suddenly life is actively resumed. The parrots and the monkeys scold, the geese cackle, the ass brays, but man hurries anew about his business. Torpor is shaken off, and a nervous activity takes the place of silence and inaction. The Princess has arisen, and moves forward, though with dazed eyes and uncertain steps, encumbered by the folds of her old-world garments. In confidence, yet not without hesitation, she follows the stranger into a world which is new and unimaginable to her. The dawn as she draws onward quickens all her pulses, and shines more and more upon her, as she advances, with the light of incomparable promise. . . . .

THE MEANING OF "BRITISH INDIA."

. . . . . . Politically, India is divided into some thirteen provinces of varying size under direct British administration, and a number of native States, estimated at more than 200, which exercise more or less of the attributes of sovereignty under British control. According to Act of Parliament (52 and 53 Vict. c. 63, sec. 18, subsecs. 4 and 5), "British India" is interpreted to mean "all territories and places within His Majesty's dominions which are for the time being governed by His Majesty through the governor-general of India or through any other governor or officer subordinate to" him; and "India" is interpreted to mean "British India together with any territories of any native prince or chief under the suzerainty of His Majesty exercised through the governor-general of India, or through any other governor or officer subordinate to" him. Native States occupy about 38 per cent. of the total area, and contain about 23 per cent. of the total population. They vary in size from Haidarabad or the Nizam's Dominions (with an area of 83,000 square miles and a population of 11 millions) to a share of a petty village in Kathiawar. The one feature common to all alike is that ordinary British administration is excluded. In Anglo-Indian phraseology, all relations with them are "political." . . . .

NATIVE STATES AND BRITISH DOMINION.

. . . . . . Almost all the native states of India, therefore, represent the scattered remnants of those rulerships that were hastily built up out of the ruins of the Moghal empire, which had itself consolidated a number of pre-existent kingdoms. The whole Indian continent had fallen back into that condition of separate contending principalities, professing but not practising allegiance to an emperor at Delhi, which prevailed before Baber founded the Moghal dynasty in the early part of the 16th century. That dynasty had now succumbed; but it had hardly passed away before another empire began to take the vacant place, growing slowly at first and with almost imperceptible advances. The rise and progress of the British power, however, in no way followed the method of its predecessor; and this difference had an important effect upon the formation of the native states as we now see them. In the 16th century Baber conquered all northern India by force of arms, and his successors extended their dominion by a series of campaigns; they subdued all opposition by superiority in war. They left standing no rivals whom they could overthrow; their object was to bring the whole country under their yoke; they tolerated no equality; their monarchy was avowedly military and aggressive; their power levelled every obstacle that it could reach.

Extension of British control. The British dominion began in another manner and went on by other methods. Englishmen had obtained their foothold on the Indian sea-coast as traders, and for some time afterwards they neither attempted nor desired territorial possessions. Their gradual interference in the quarrels and intrigues of the native princes was mainly forced upon them in their commercial competition with the French; and thus they entered upon a system of extending their sphere of influence by alliances with the nearest states, assisting them with troops and money, so that their general policy was to join any friendly power in resistance against a common enemy. When in 1757 Clive made for the East India Company their first substantial conquest of territory—the province of Bengal—he merely added one more to the long list of states, held nominally by a grant from the Delhi emperor but really independent, into which the old empire had been broken up piecemeal. . . . . . .

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THE ACT OF 1858.

. . . . . . The Act for the better government of India (1858), which finally transferred the entire administration from the Company to the crown, was not passed without an eloquent protest from the directors, nor without acrimonious party discussion in parliament. It enacts that India shall be governed by, and in the name of, the sovereign of England through one of the principal secretaries of state, assisted by a council of fifteen members. The governor-general received the new title of viceroy. The European troops of the Company, numbering about 24,000 officers and men, were amalgamated with the royal service, and the Indian navy was abolished. By the Indian Councils Act (1861) the governor-general's council and also the councils at Madras and Bombay were augmented by the addition of non-official members, either natives or Europeans, for legislative purposes only; and by another Act passed in the same year high courts of judicature were constituted out of the existing supreme courts at the presidency towns. . . . . .

ADMINISTRATION.

. . . . . . The supreme authority over all British India, both for executive and legislative purposes, is vested by a series of Acts of Parliament in the viceroy or governor-general-in-council, subject to the ultimate sanction of the secretary of state in England. Every executive order and every legislative statute runs in the name of the "Governor-General-in-Council"; but in certain exceptional classes of cases a power is reserved to the viceroy to act independently of his council. This council is twofold. First, there is the ordinary or executive council, usually composed of about six official members besides the viceroy, which may be compared with the cabinet of a constitutional country. It meets regularly at short intervals, discusses and decides upon questions of foreign policy and domestic administration, and prepares measures for the legislative council. Its members divide among themselves the chief departments of state, such as those of foreign affairs, finance, war, public works, &c.; while the viceroy combines in his own person the duties both of constitutional sovereign and prime minister. Secondly, there is the legislative council, which is constituted by the same members as the preceding, with the addition of the governor of the province in which it may be held, and official delegates from Madras and Bombay, together with certain nominated members representing the non-official native and European communities. . . . .

CASTE.

. . . . . . Whence arose this new constitution of the Aryan tribes into nations, with castes, priests, and kings? We have seen that, although in their earlier colonies on the Indus each father was priest in his family, yet the chieftain, or lord of the settlers, called in some man specially learned in holy offerings to conduct the great tribal sacrifices. Such men were highly honoured, and the famous quarrel which runs throughout the whole *Veda* sprang from the claims of two rival sages, Vashishtha and Visvámitra, to perform one of these ceremonies. The art of writing was unknown, and the hymns and sacrificial words had to be handed down by word of mouth from father to son. It thus happened that the families who learned them by heart became, as it were, the hereditary owners of the liturgies required at the most solemn offerings to the gods. Members of these households were chosen again and again to conduct the tribal sacrifices, to chant the battle-hymn, to implore the divine aid, or to pray away the divine wrath. Even the *Rig-Veda* recognizes the importance of these sacrifices. "That king," says a verse, "before whom marches the priest, he alone dwells well-established in his own house, to him the people bow down. The king who gives wealth to the priest, he will conquer, him the gods will protect." . . . .

THE PLAGUE.

. . . . . . In 1896–97 India was revisited by famine, and the bubonic plague, which has since been constantly present in more or less virulence, first showed itself. The famine of 1896–97 extended over some 310,000 square miles, with a population in round figures of 35 millions, and was most severe in the North-West Provinces, in Oudh, and in the Central Provinces. It lasted from about September 1896 till October 1897. At the worst time the total numbers on relief were 4,609,000. The death-rate per mille in the famine districts rose from 32·80, the normal death-rate, to 39·54. The total Government expenditure and loss to Government is estimated at about $17\frac{1}{4}$ millions. A commission was appointed at the close of 1897 to report on the working of the Famine Code, and on the sufficiency of measures taken to combat famine. It reported in the ensuing year. The bubonic plague was first identified in Bombay city towards the end of September 1896, and afterwards spread to the Deccan, the western districts of the Nizam's Dominions, the Punjab, the North-West Provinces, and Bengal. From September 1896 to the end of April 1900 the reported plague deaths in the whole of the Bombay country were 299,844, and 58,841 for other parts of India, while the actual plague deaths were probably considerably more. The Bombay and Karachi export trade has been seriously affected by the plague. Grievous as is the mortality from plague, a total even, say, of 475,000 for a period of nearly four years is less than the difference between the highest cholera mortality (727,493 in 1892) and the lowest (152,703 in 1898) in British India in a single year. In November 1898 a mixed commission, consisting of three medical experts from the United Kingdom and two Indian officials, was appointed to investigate the plague question in India. Their report favoured inoculation, opposed the enforced removal of plague patients to hospitals, which had proved the cause of much rioting and violence; and made other suggestions of which the sense generally was unfavourable to segregation, or evacuation of infected places except in villages and small towns, and to cordons, and the search of railway passengers. Again, in 1900, famine appeared and proved itself most severe in Bombay, Rajputana, and the Central Provinces. The tract concerned contained a population of 85 millions, of whom perhaps 52 millions were severely affected. Of the 85 millions, $43\frac{1}{4}$ millions were inhabitants of native states, and $41\frac{3}{4}$ millions were in British territory. At the close of May 1900, 5,802,000 were in receipt of relief. After the rainy season of 1900 distress gradually abated. The expenditure necessary to cope with the famine was estimated at £13,000,000 (at 15 rupees to the £1). The death of adults from starvation is stated to have been of rare occurrence, and due entirely to the apathy of the people themselves. . . . . . .

Finance and plague.

VILLAGE INDUSTRIES.

. . . . . . Historically the most interesting, and still the most important in the aggregate, of all Indian industries are those conducted in every rural village of the land. The Hindu village system is based upon division of labour quite as much as upon hereditary caste. The weaver, the potter, the blacksmith, the brazier, the oil-presser, are each members of a community, as well as inheritors of a family occupation. On the one hand, they have a secure market for their wares, and, on the other, their employers have a guarantee that their trades shall be well learned. Simplicity of life and permanence of employment are here

The lives of Clive and Warren Hastings related in the Tenth Edition will well repay reading.

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For the titles of some of the articles on Art subjects, see p. 114 of this pamphlet.

happily combined with a high degree of excellence in design and honesty of execution. . . . .

RATS AND MICE.

. . . . . . The rat and mouse family is only too numerous. Conspicuous in it is the loathsome bandicoot (*Mus bandicota*), which sometimes measures 2 feet in length, including its tail, and weighs 3 lb. It burrows under houses, and is very destructive to plants, fruit, and even poultry. More interesting is the tree rat (*M. arboreus*), a native of Bengal, about 7 inches long, which makes its nest in cocoa-nut palms and bamboos. The voles or field mice (genus *Arvicola*) occasionally multiply so exceedingly as to diminish the out-turn of the local harvest, and to require special measures to be organized for their suppression. . . . .

[*The statistics as to deaths from snake-bite in India form a startling feature of these articles: in one year a total of* 16,777 *persons were killed by snakes, and* £871 *was paid in rewards for the destruction of* 127,295 *snakes.*]

A MONSTER COMMONWEALTH.

From the Articles (33 pages) *on* AUSTRALIA *by* R. HELM, Rev. J. MILNE CURRAN, *and* T. H. COGHLAN, *Government Statistician, New South Wales.*

EXPLORATION.

Australia.— . . . . . . By the end of the year 1873 the whole of the eastern portion of Australia had been explored, the unknown part of the continent being confined to the interior of West Australia and those districts of South Australia north of the Macdonnell Range and west of the overland telegraph line. . . . .

The list of explorers from 1875 to 1900 is a long one; but after Forrest's and Giles's expeditions the main object ceased to be the discovery of pastoral country: a new zest had been added to the cause of exploration, and most of the smaller expeditions concerned themselves with the search for gold. Amongst the more important explorations may be ranked those of Tietkins in 1889, of W. Lindsay in 1891, of Wells in 1896, of Hubbe in 1896, and of the Hon. David Carnegie in 1896–97. . . . .

One of the most successful expeditions which traversed West Australia was that led and equipped by the Hon. David Carnegie, which started in July 1896, and travelled north-easterly until it reached Alexander Spring; then turning northward, it traversed the country between Wells's track of 1896 and the South Australian border. The expedition encountered many hardships, but successfully reached Hall Creek in the Kimberley district. After a few months' rest it started on the return journey, following Sturt Creek until its termination in Gregory's Salt Sea, and then keeping parallel with the South Australian border as far as Lake Macdonald. Rounding that lake the expedition moved south-west and reached the settled districts in August 1897. The distance travelled was 5000 miles, and the actual time employed was eight months. This expedition put an end to the hope, so long entertained, that it was possible to obtain a direct and practicable route for stock between Kimberley and Coolgardie gold-fields; and it also proved that, with the possible exception of small isolated patches, the desert traversed contained no auriferous country. . . . .

ABORIGINES.

. . . . . . The aboriginies of Australia are a single race throughout the whole continent. They are far removed in character from any other peoples, and have evidently been isolated from the rest of the human race from prehistoric times. Although their physical and mental characters stamp them as one, it is generally accepted now that the race is a blend of two or three different elements, introduced into Australia probably when the continent was still connected by dry land with New Guinea. If the aboriginal races be divided, as they conveniently may, into three classes, class A would be characterized as follows:—Hunters and fishers who dig for tubers, build crude canoes, have implements of rude design, have no fixed abode and no buildings. Class B would comprise hunters of a higher class, having finer-finished weapons, showing skill in carving, dressing neatly, and having habitations. Class C would include a higher grade, namely, those with fixed habitations, some rude method of agriculture, and some form of government. The Australian aborigines undoubtedly belong to the first or lowest class. They are typical hunters, "in this respect unapproached by the Canadian trapper, the South African bushman, or any other people, savage or civilized." Although in physical appearance the natives vary considerably, still they are clearly differentiated from any other race. The colour of the skin ranges from dusky copper to black. Muscle is usually not well developed, the legs in particular being notably destitute of calves. The physique of the aborigines of the central and more arid portions of the continent is not, as might be expected, up to that of the favoured tribes living on the coast or coastal uplands. Except in the arid anterior the Australian black-fellow averages 5 feet 6 inches in height, while savages standing 6 feet are not uncommon. There is usually an abundance of hair on the face and breast; but towards the northern portions of the continent it has been noted that the aboriginal has a less luxuriant beard. The hair of the head is raven black and wavy; this is somewhat modified where Papuan influence has been felt, the hair then being quite curly and frizzly. The peculiarities about the aboriginal's head are very marked. The skull is abnormally thick and the cerebral capacity small. The head is long and somewhat narrow, and the forehead recedes in a marked degree. He has usually excellent teeth, and the hands and feet are not strikingly large. The black-fellow's carriage is graceful and erect; he walks with the head well thrown back, and his senses are always on the alert. His powers in tracking, stalking his prey, and hurling his spear are proverbial. His implements, offensive and defensive, have been well described by standard authors, but little or no light has been thrown on the origin of that wonderful weapon, the boomerang. Some writers have taken the trouble to show that the boomerang was in use ages ago in Africa and in India; but if we define the boomerang as an instrument which when projected into the air returns to its thrower, it may be safely said that we have no proof that any other race ever knew of such an implement. The boomerang that returns to the thrower is rarely if ever used for fighting purposes. The stone implements of the aborigines may be said to be crude in the extreme. But any good collection of their implements will show—(1) flakes; (2) knives, in many varieties; (3) spear-heads; (4) chisels; (5) scrapers; (6) needles or awls; (7) hammers; (8) anvils; and (9) grinding stones. . . . . .

THE STORY OF AUSTRALIAN FEDERATION.

. . . . . . The question of federation was not lost sight of by the framers of the original constitution which was bestowed upon New South Wales. In the report of the committee of the Legislative Council appointed in 1852 to prepare a constitution for that colony, the following passage occurs:—"One of the most prominent legislative measures required by the colony, and the colonies of the Australian group generally, is the establishment at once of a General Assembly, to make laws in relation to those intercolonial questions that have arisen or may hereafter arise among them. The questions which would claim the exercise of such a jurisdiction appear to be (1) intercolonial tariffs and the coasting trade; (2) railways, roads, canals, and other such works running through any two of the colonies; (3) beacons and lighthouses on the coast; (4) intercolonial gold regulations; (5) postage between the said colonies; (6) a general court of appeal from the courts of such colonies; (7) a power to legislate on all other subjects which may be submitted to them by addresses from the legislative councils and assemblies of the colonies, and to appropriate to any of the above-mentioned objects the necessary sums of money, to be raised by a percentage on the revenues of all the colonies interested." This wise recommendation received very scant attention. . . . . . .

History of federation movement.

Meanwhile a sort of makeshift was devised, and the Imperial Parliament passed a measure permitting the formation of a Federal Council, to which any colony that felt inclined to join could send delegates. Of the seven colonies New South Wales and New Zealand stood aloof from the council, and from the beginning it was therefore shorn of a large share of the prestige that would have attached to a body speaking and acting on behalf of a united Australia. . . . . The council held eight meetings, at which many matters of intercolonial interest were discussed. The last occasion of its being called together was in 1899, when the council met in Melbourne. In 1889 an important step towards

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federation was taken by Sir Henry Parkes. The occasion was the report of Major-General Edwards on the defences of Australia, and Sir Henry addressed the other premiers on the desirability of a federal union for purposes of defence. The immediate result was a conference at Parliament House, Melbourne, of representatives from each of the seven colonies. This conference adopted an address to the Queen expressing its loyalty and attachment, and submitting certain resolutions which affirmed the desirability of an early union, under the Crown, of the Australasian colonies, on principles just to all, and provided that the remoter Australasian colonies should be entitled to admission upon terms to be afterwards agreed upon, and that steps should be taken for the appointment of delegates to a national Australasian convention, to consider and report upon an adequate scheme for a federal convention. In accordance with the understanding arrived at, the various Australasian parliaments appointed delegates to attend a national convention to be held in Sydney, and on the 2nd March 1891 the convention held its first meeting. Sir Henry Parkes was elected president, and he moved a series of resolutions embodying the principles necessary to establish, on an enduring foundation, the structure of a federal government. These resolutions were slightly altered by the conference, and were adopted in the following form :—

1. The powers and rights of existing colonies to remain intact, except as regards such powers as it may be necessary to hand over to the Federal Government.
2. No alteration to be made in states without the consent of the legislatures of such states, as well as of the federal parliament.
3. Trade between the federated colonies to be absolutely free.
4. Power to impose customs and excise duties to be in the Federal Government and parliament.
5. Military and naval defence forces to be under one command.
6. The federal constitution to make provision to enable each state to make amendments in the constitution if necessary for the purposes of federation.

Other formal resolutions were also agreed to, and on the 31st of March Sir Samuel Griffith, as chairman of the committee on constitutional machinery, brought up a draft Constitution Bill, which was carefully considered by the convention in committee of the whole and adopted on the 9th of April, when the convention was formally dissolved. The Bill, however, fell absolutely dead. Not because it was not a good Bill, but because the movement out of which it arose had not popular initiative, and therefore failed to reach the popular imagination. . . . . . .

THE TRIUMPH OF MR CHAMBERLAIN.

. . . . . . Under an Act of the British Parliament, dated 9th July 1900, passed under the auspices of Mr Chamberlain, Secretary of State for the colonies, a proclamation was issued, 17th September of the same year, declaring that, on and after 1st January 1901, the people of New South Wales, Victoria, South Australia, Queensland, Tasmania, and West Australia should be united in a Federal Commonwealth under the name of the Commonwealth of Australia. The Act which gave authority for the issue of this proclamation embodied and established (with such variations as had been accepted on behalf of the colonies) the constitution agreed to at the Premiers' conference of 1899. It was cordially welcomed in the mother country, and though its passage was marked by certain difficulties, finally became law amid signs of general approval. The difficulties arose with regard to the right of appeal to the Queen in Council. By Clause 74 of the original Bill this right was very seriously curtailed; Mr Chamberlain wished to preserve it as in the case of Canada, while, in order to disarm colonial opposition, he suggested that the judicial committee of the Privy Council should be strengthened by the appointment of four colonial members with the rank of lords of appeal. But after privately conferring with the Australian delegates he withdrew this suggestion, and when the second reading of the Bill came on he announced that a compromise had been agreed upon. The final form of the disputed clause provided that in cases which involved non-Australian interests the right of appeal should be fully maintained, and that in questions between the Commonwealth and a single state, or between two states, leave to appeal might be given by the High Court of Australia. Mr Chamberlain indicated that this matter might receive further development at a future time, and that it was possible that after consulting with the colonies the Government might propose the establishment of a permanent court of appeal for the whole empire. . . . . .

Commonwealth Act, 1900.

THE OUTPUT OF GOLD

Australia is one of the great gold producers of the world, and its yield in 1899 was about £14,334,000 sterling, and the total value of its mineral production was approximately £19,663,000. Gold is found throughout Australia, and the present prosperity of the states is largely due to the discoveries of this metal, the development of other industries being, in a country of varied resources, a natural sequence to the acquisition of mineral treasure. From the date of its first discovery, up to the close of 1899, gold to the value of £368,160,000 sterling had been obtained in Australia. Victoria, in a period of forty-eight years, contributed about £254,000,000 to this total, and is still a large producer, its annual yield being about 736,000 oz., 29,000 men being engaged in the search for the precious metal. Queensland's annual output is 705,000 oz. ; the number of men engaged in gold-mining is 10,000. In New South Wales the greatest production was in 1852, soon after the first discovery of the precious metal, when the output was valued at £2,660,946 ; the production in 1899 was about 496,000 oz., valued at £1,752,000. Until recently West Australia was considered to be destitute of mineral deposits of any value, but it is now known that a rich belt of mineral country extends from north to south. The first important discovery was made in 1882, when gold was found in the Kimberley district; but it was not until a few years later that this rich and extensive area was developed. In 1887 gold was found in Yilgarn, about 200 miles east of Perth. This was the first of the many rich discoveries in the same district which have made West Australia the chief gold-producer of the Australian group. At the present time there are eighteen goldfields in the state, and it is estimated that over 20,000 miners are actively engaged in the search for gold. In 1899 the production amounted to 1,644,000 oz., as compared with 30,310 oz. in 1891. Of all the Australian states South Australia has produced the smallest quantity of gold, the total output from the commencement of mining operations being valued at little more than £2,213,000 sterling. The following table gives the value of gold raised from the commencement of mining to the close of the year 1899: —

State.	Value Produced.
New South Wales	£47,546,000
Victoria	254,157,000
Queensland	47,338,000
South Australia	2,213,000
West Australia	16,906,000

The production of gold, which had been declining steadily for many years, reached the lowest point in 1886. Since then there has been a marked revival. . . . .

DIVERSITY OF BIRD-LIFE.

. . . . . . The birds of Australia in their number and variety of species (reckoned at 690) may be deemed some compensation for its poverty of mammals; yet it will not

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stand comparison in this respect with regions of Africa and South America in the same latitudes. The black swan of West Australia was thought remarkable when discovered, as belying an old Latin proverb. There is also a white eagle. The vulture is wanting. Sixty species of parrots, some of them very handsome, are found in Australia. The emu, a large bird of the order Cursores, or runners, corresponds with the African and Arabian ostrich, the rhea of South America, and the cassowary of the Moluccas and New Guinea. In New Zealand this order is represented by the apteryx, as it formerly was by the gigantic moa, the remains of which have been found likewise in Queensland. Of the same species as the birds of paradise is the graceful *Mœnura superba*, or lyre-bird, with its tail feathers spread in the shape of a lyre. The mound-raising megapodes, the bower-building satin-birds, and several others, display peculiar habits. The honey-eaters present a great diversity of plumage. There are also many kinds of game birds, pigeons, ducks, geese, plovers, and quails.

The ornithology of New South Wales and Queensland is more varied and interesting than that of the other provinces. . . . .

THE GREAT DOMINION.

From the Articles (32 pages) on CANADA by Professor DANIAS WILSON, G. M. DAWSON, LL.D., F.R.S., JAS. W. ROBERTSON, and G. R. PARKIN, LL.D., C.M.G.

THE CESSION.

Canada.— . . . . . On the cession of Canada to Great Britain in 1763, its French colonists were guaranteed the free exercise of the Roman Catholic religion, and equal civil and commercial privileges with British subjects. Further privileges were secured by "the Quebec Act" of 1774, whereby the old French laws, including the custom of Paris, the royal edicts, and those of the colonial intendants under the French regime, were declared binding in relation to all property and civil rights; while the criminal law was superseded by that of England with its trial by jury. The seignories, with their feudal rights and immunities, were also perpetuated; and thus, under the fostering protection of England, the colonial life of the France of Louis XV. and the regency survived in the "New France" of Canada, unaffected by the Revolution of 1792. But the whole French population at the date of the conquest did not exceed 65,000. From Great Britain, and still more from the older colonies, emigrants hastened to occupy the new territory to the north of the St Lawrence. . . . .

OLD FRENCH LAW.

. . . . . . So long as Canada consisted of the two provinces of Upper and Lower Canada, even when united for legislative purposes they retained their diverse laws and distinct judicial systems, while the Privy Council of Great Britain constituted the final court of appeal for both. In the province of Quebec the old French law, which was introduced under Louis XIV., is still the basis of the law of property. There the tenure of property remained strictly feudal, until the settlement of the claims of the seigniories by the Act of 1854 brought the old system to an end. But before that was effected new townships had been surveyed, and land disposed of to settlers to be held in free and common soccage. The commercial law is regulated partly by the old French code, but modified by the English customs, and by later Canadian legislation. The criminal laws of England, and the right of trial by jury, were introduced by 14th Geo. III. c. 83. Since then all additions to the criminal law, or modifications of the statutes, have depended on the Acts of the colonial legislature. The religion, laws, language, and customs of the French population were all guaranteed to them at the time of the cession of Canada to England; and the rights and privileges pertaining to the Roman Catholic Church, among a population regarding its creed as their national religion, help to perpetuate essential differences, by maintaining what is still practically an established if not a state church. . . . .

WANEY TIMBER.

. . . . . . The forests of Canada abound in fine timber, adapted to almost every variety of useful or ornamental work, and furnishing one main element of wealth to the province. Foremost in point of utility are the white and red pine, annually exported in large quantities to the United States and to Europe. Three-fourths of the square and flatted timber produced in the Ottawa region in 1873 was of white pine. Cedar, red pine, and railway-ties chiefly made of tamarac, were the others which were produced in largest quantities. Pine trees of 100 feet high are not uncommon; and instances are not rare of trees greatly exceeding that height.

The pine prepared for exportation is made into squared timber, measuring from 60 to 70 feet in height; or into waney timber (as it is called when only partially squared or flatted), averaging generally the same lengths though sometimes running to 100, or even 120 feet. . . . .

THE NEED FOR MAPS.

. . . . . . The wide mountainous Pacific border of the continent, constituting the "Rocky Mountain region," may best be named as a whole the Cordillera or Cordilleran belt. The Rocky Mountains proper in Canada comprise only the well-defined eastern system of ranges of this belt. The Cordillera includes nearly the entire province of British Columbia, with the whole of the Yukon district of the North-West Territories. Its width is about 400 miles, and it is throughout essentially a mountainous country, very complicated in its orographic features and interlocking river systems, but as yet in the main very imperfectly delineated on any maps. . . . . . .

MANUFACTURES.

. . . . . . In 1898 Canada exported $31,179,113 worth of manufactures, a great proportion of this being the produce of the mine, the forest, the sea, and the farm; but since the adoption of the national policy the manufacture of goods for home consumption has very largely increased, such as cotton and woollen goods, boots and shoes, agricultural implements, and a variety of miscellaneous articles previously imported, and the countries sending the largest amounts, are, in their order, United States, Great Britain, Germany, France, and Holland. The principal classes of goods imported for home consumption are bread-stuffs, carriages, articles of cotton, articles of flax, hemp and jute, iron and steel, oils, leather, paper, provisions, silk and woollen goods. Bread-stuffs comprise rice, sago, tapioca, and other articles not of wheat product. . . .

FISHERIES.

. . . . . . The principal fisheries are those on the Atlantic coast carried on by the inhabitants of Nova Scotia, New Brunswick, Prince Edward Island, and to some extent by the people of the eastern section of Quebec. Cod, herring, mackerel, and lobsters are the chief product of the fisheries, though halibut, salmon, anchovies, and so-called sardines are also exported. In British Columbian waters the main catch is of salmon, in addition to which are halibut, oolachan, herring, sturgeon, cod, shell-fish, and fish taken for their oil value—namely, the dog-fish and basking shark and the rat-fish. Ontario and Manitoba produce white fish, sturgeon, and other fresh-water fish. In 1897 there were 78,959 persons engaged in the fishing industry, though only 27,079 were permanently so employed. The total production of fish in 1897 was in value $22,783,546, of which $10,841,661 was exported and the balance consumed at home, this being augmented (for bait and other purposes) by importations to the amount of $784,323.

The business of fur-seal catching is carried on to some extent in the North Pacific by sealers from Victoria, but the returns of the

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last few years show it to be a decreasing industry, as well as one causing some friction with the United States. In 1895 the catch by Canadian pelagic sealers was 73,614 seals; in 1896, 55,677; in 1897, 30,410; and in 1898, 28,552. Owing to the seizure of Canadian sealing vessels on the high seas, the contention that the United States were justified in making such seizures, and the repudiation of such claim by Great Britain, the question was submitted to an international commission sitting in Paris, with the result that a certain area (60 miles from shore) was prescribed round the sealing islands of Alaska in which pelagic sealing was forbidden, and damages to be settled by arbitration were awarded to the owners of vessels that had been unlawfully seized. This money was paid in 1899. . . . .

COMMERCE.

. . . . . . Since 1875 commerce has greatly expanded. The opening up of the fertile lands in the north-west, the increase of population, the discovery of new mineral fields, and the construction of railways have changed the conditions, methods, and channels of trade. The development that has taken place may be seen from the figures in the following tabular statement:—

Year.	Total Exports.	Total Imports.	Entered for Consumption.	Duty.
	$	$	$	$
1880	87,911,458	86,964,747	71,782,349	14,138,849
1890	96,749,149	121,858,241	112,765,584	24,014,908
1900	191,894,723	189,622,513	180,804,316	28,889,110

AGRICULTURE.

. . . . . . About 42 per cent. of the population of Canada belong to families whose heads or members are engaged in agriculture. A large number more are employed in industries arising out of agriculture; among these are millers of flour and oatmeal, curers and packers of meat, makers of cheese and butter, and persons occupied in the transportation and commerce of grain, hay, live stock, meats, butter, cheese, milk, eggs, fruit, and various other products. It is estimated that the annual value of all farm crops and products in Canada is not less than 600,000,000 dollars. The country is splendidly formed for the production of food. Across the continent there is a zone about 3500 miles long and nearly as wide as France, with a climate adapted to the production of foods of superior quality. In places which are now cultivated the soil has been found fertile. That of Manitoba is rich in the constituents of plant food to a degree that surpasses nearly all the soils of Europe. . . . .

THE CONFEDERATION.

. . . . . . The four provinces of Ontario, Quebec, New Brunswick, and Nova Scotia were confederated as the Dominion of Canada in 1867. At the request of the Dominion parliament the territory ruled by the Hudson Bay Company was ceded to Canada by the imperial Government in 1870, on the payment of $300,000 to satisfy the Company's claims. From a portion of this territory the province of Manitoba was immediately formed, though it became necessary to quell by military force a rebellion among the half-breeds of the Red River district before the Dominion could finally take possession of the country. In the following year (1871) British Columbia joined the Dominion, the chief condition of the union being that a railway should be built within ten years to connect the Pacific coast with the eastern provinces. In 1873 Prince Edward Island entered the confederation. The Nelson River country to the west of Hudson Bay was in 1876 formed into the district of Keewatin. In the year 1880 all the remaining British possessions on the continent, except Newfoundland and the dependent district of Labrador, were formally annexed to Canada. Two years later the provisional districts of Assiniboia, Saskatchewan, Alberta, and Athabasca were created, and Regina was fixed upon as their capital. It was not till 1895 that the great unorganized tract to the north and west was divided into four districts—Ungava, Franklin, Mackenzie, and Yukon. . . . .

POLITICAL PROBLEMS.

. . . . . . The problems with which the statesmen of confederated Canada have had to deal in connexion with the vast territory thus brought under their control have been numerous and of varied character. Immediately after confederation a serious agitation for repeal of the union arose in Nova Scotia, which had been brought into confederation by a vote of the Legislature, without direct appeal to the people; this danger was only averted after much negotiation, and considerable modification of the terms on which that province entered the Dominion. Much friction has arisen in defining accurately the division of power between the Federal and provincial Governments. The founders of confederation had, in the troubles of the United States, an object-lesson on the necessity of strengthening the central authority. The American constitution, after clearly defining the powers of the Federal Government, leaves all unstated authority to the sovereign states. Canada adopted the opposite course. While the range of legislative control for the province was clearly defined, the residuum of undelegated authority was given to the Federal Government. On this point several differences have arisen, the Dominion sometimes disclaiming, sometimes asserting, a right to interfere. When, in 1871, the New Brunswick legislature passed a Bill making public education non-sectarian, the opposition, on behalf of the Roman Catholic minority, appealed to the Ottawa Government to disallow the Act. This it refused to do, asserting that the province had acted within its rights. A similar policy was followed in 1888, when the Quebec legislature granted to the Jesuit order a sum of $400,000 in compensation for property forfeited to the Crown. . . . .

A RULING OF THE PRIVY COUNCIL.

. . . . . . A difference of long standing was settled in 1898 by the Privy Council, which ruled that in the question of the control of fisheries, while the Dominion had exclusive power to make regulations, the issue of licenses and the collection of revenues from this source belong to the provinces, except in the case of Manitoba and the North-West Territories, where no prior rights existed. In 1878 the Federal Government passed the Scott Act, empowering municipalities to deal with the traffic in liquor. The right of the Federal parliament to pass this Act was questioned as an infringement of provincial powers, but on appeal to the Privy Council the right was maintained. It seems probable that most of the possible questions of difference between federal and provincial authority have now been settled by these and similar judicial decisions, and that Canadian experience in adapting a federal system to British methods of government will prove extremely useful in further applications of the federal idea to other parts of the empire, or to the empire itself. In this connexion it may be noted that dual representation, or the privilege of representing a constituency in the Dominion parliament and in a provincial assembly at the same time, was tried in the early years of confederation, but was abolished in 1872 as unsatisfactory. . . . .

CONSTRUCTIVE LEGISLATION.

. . . . . . Among matters demanding constructive legislation in the organization of the new state the following may be noted:—In 1871 a uniform system of *decimal currency* was established for the whole Dominion. The creation of a *Supreme Court*, after engaging the attention of the Canadian parliament for several years, was finally accomplished in 1876. This court is presided over by a chief justice and

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five puisne judges, and has appellate civil and criminal jurisdiction for the Dominion. By an Act passed in 1891 the Government has power to refer to the Supreme Court any important question of law affecting the public interest. The right of appeal from the Supreme Court thus constituted to the Judicial Committee of the Privy Council marks, in questions judicial, Canada's place as a part of the British empire. The appointment, first made in 1897, of the chief justices of Canada, Cape Colony, and South Australia, as colonial members of the Judicial Committee, still further established the position of that body as the final court of appeal for British people. The British North American Act of 1867 provided that the control of *elections for the Dominion parliament* should rest with the various provinces. This measure was necessary owing to the lack of machinery at the time for managing federal matters. This clause was superseded in 1885 by a franchise Bill, which provided for uniformity of suffrage and recognized property qualification as determining the right to vote. A later Act, passed in 1898, restored the provincial franchise as the basis for federal elections, thus reintroducing an element of variety in the qualifications of voters. Ontario, Manitoba, British Columbia, and Prince Edward Island have practically manhood suffrage; in Quebec, Nova Scotia, and New Brunswick a property qualification is required. A general election law was passed in 1874, which provided for vote by ballot, the holding of elections simultaneously throughout the Dominion, and the abolition of property qualification for members of parliament. In the North-West Territories, however, elections were held by open voting until 1885. . . . .

RAILWAY DEVELOPMENT.

. . . . . . In a country of vast distances with great areas to be opened for settlement, *railway development* was necessarily from the first a leading question of public policy. Two great national lines were projected as an essential part of confederation: the Intercolonial, built to connect the Maritime Provinces with the provinces on the St Lawrence; the Canadian Pacific to unite the Atlantic and the Pacific coasts of the Dominion. The first of these was completed in 1876; with the various extensions since built it now includes 1511 miles of road, and remains entirely under the control of the Government. The construction of the Canadian Pacific was entrusted to a private company, which received large subsidies of land, money, and completed railway. This system has grown to be one of the greatest in the world; it owns more than 7000 miles of road and controls about 3000 more; in its various ramifications it touches the most important points of Canada; it has established steamship communication with Japan and along the great lakes. The railway mileage of the whole Dominion has grown from 4022 in 1874 to 17,250 in 1899; and new lines are still being built as new areas become settled. The question of subsidizing railways has at various times profoundly affected the politics of the country. . . . .

IMMIGRATION.

. . . . . . The completion of the Canada Pacific railway, and the consequent opening-up of the prairie lands of the north-west, have been followed by a considerable increase in immigration. But at no time has this been excessive, nor is any foreign nation represented by numbers sufficiently large to prevent ultimate fusion with the English-speaking element. A considerable migration has lately taken place into the north-west from the western states of America. The exodus from Iceland, begun in 1875, has resulted in greatly decreasing the population of that island. In Southern Manitoba are settled large numbers of Mennonites, a thrifty and honest if somewhat exclusive folk, who fled from Europe to escape military service. For a similar reason the Doukhobors (*q.v.*), a peculiar religious sect from the Black Sea provinces of Russia, in 1899 emigrated to Canada in a body. Scottish crofters from the Highlands, English and Irish agricultural labourers, Americans, Norwegians, Galicians, and Danes, help to swell a varied but hardy and industrious population. The district of Alberta is largely occupied by Englishmen who are engaged in ranching. On the Pacific slope the Chinese, though discouraged by a heavy tax, are found in considerable numbers, while the influx of Japanese coolies is creating a problem in the labour market of British Columbia. On confederation Canada assumed the care of her own land *defences*. The Fenian raids of 1866 and 1870 delayed for a short time the removal of imperial regiments, but in the latter year all British forces were withdrawn except those stationed at Halifax. During the war in South Africa (1899-1902) these, too, were temporarily replaced by a Canadian garrison. On the other hand, within the last few years the imperial and the Canadian Governments have entered into an agreement for the joint defence of Esquimault, a new coaling and naval station on the Pacific coast. . . . .

The Empire on which the Sun never sets.

THE British Empire, as we are told in the *Encyclopædia Britannica*, occupies nearly one-quarter of the land-surface of the world, peopled by 408,588,963 persons of all races and religions, more than one-quarter of the world's population.

The Empire is divided naturally into five principal parts—the United Kingdom, South Africa, India. Australia, and Canada, connected by intermediate ports and coaling-stations such as the Bermudas, Gibraltar, Ceylon, the Straits Settlements, Hong Kong, etc. There has been an astounding growth since the days of William the Conqueror, when the Channel Islands—which still remain to us—became part of the British inheritance, or, to take over-sea expansion, since Newfoundland was occupied in the name of Queen Elizabeth in the year 1583.

To defend that Empire we spend upon our naval forces, as the Tenth Edition tells us, over £27,000,000 a year, and maintain an army of about 1,000,000 men.

How can we take a survey of the vast Empire ruled over by King Edward VII.? Where can we obtain the means to learn the facts, the full facts, of all the different countries and races which are embraced within the boundaries of this world-wide dominion? Where study its army and navy, its commerce and manufactures, the means of communication which bind it together, its social and political conditions, its various forms of government, its history, and the lives of the great men of to-day who so fully uphold and increase its honour? We want one work conveniently constructed with a comprehensive index to abolish the labour of research. This work is the Tenth Edition of the *Encyclopædia Britannica* in 35 volumes.

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The New Crown Colony.

TO estimate accurately the number of pages devoted in the *Encyclopædia Britannica* to the subject of Africa alone would, in itself, be a considerable labour. The roughest estimate, however, gives us a minimum of 200 pages dealing with Africa, East Africa, Central Africa, South Africa, the Transvaal, the Orange River Colony, Rhodesia, Cape Colony, Natal. In the First Edition of the work (1771) less than one page was devoted to Africa—a fact in itself portentously significant of advance, and it is well to remember that even the vast subject of South Africa, in the manifold aspects in which recent history has revealed it, is but a portion of a continent to every section of which the Tenth Edition of the *Encyclopædia Britannica* has devoted separate articles.

A group of Extracts from the Articles devoted to SOUTH AFRICA *in the Tenth Edition.*

WHAT WE MEAN BY "BRITISH SOUTH AFRICA."

. . . . . . The expression "British South Africa"—which has obtained general currency, although it has no official sanction—came into use, or at least began to acquire a definite meaning, in the early 'eighties, when the first step towards the partition of the continent was taken by the German occupation of Namaqualand (1885). It then became at once evident that British interests could no longer be confined to the regions south of the Orange river and east of the Drakensberg range, and that the very existence of the two long-established colonies of the Cape and Natal would be imperilled unless practical measures were taken to keep open the "English road" to the interior of the continent, which had hitherto been mainly followed by missionaries, traders, and travellers. Thus arose the imperial idea of a "British South Africa," as a political domain destined in due course to embrace in one vast federation all existing colonies and all other settlements in process of development into free, self-governing states. But such a system must necessarily lack ideal completeness—such completeness as is enjoyed by the sister federations of Canada and Australia—so long as considerable tracts are held by foreign Powers on the western and eastern seaboards (German South-West Africa; Portuguese South-East Africa). In the interior, however, the unity of the system has been secured by the suppression of the late Boer states, while its borders have been enlarged by the settlement of Matabele and Mashona Lands (South Rhodesia), and by the extension of British rule, directly or indirectly, over the whole of Bechuanaland. Thus the expression British South Africa now covers the whole of the continent from the Zambezi to the Cape, the specified German and Portuguese territories alone excepted. Including these, South Africa has a total area of about 1,364,000 square miles, and a population approximately estimated (1900) at nearly 7,000,000, and is politically divided into five British colonies, two British protectorates, and two non-British colonies. . . . .

THE OUTPUT OF GOLD.

. . . . . . Gold, with diamonds of recent discovery, still constitutes the chief mineral wealth of South Africa, which in both of these respects may be regarded as unrivalled. Full details are given elsewhere (CAPE COLONY, TRANSVAAL), and here it will suffice to state that while the Kimberley output controls the diamond markets of the world, in 1898 the Transvaal gold harvest exceeded that of Australia, Siberia, and America. The diamantiferous blue clays ("pipes") are not confined to the Cape, and rich auriferous reefs range far beyond Transvaal into Southern Rhodesia. In other respects South Africa is well mineralized, and besides iron, copper, tin, and silver, extensive coal-fields occur in the Cape (Molteno district), in Natal and Zululand (Newcastle, Nougoma), in the Orange River Colony (Kroonstad), and in various parts of the Transvaal and Rhodesia nearly up to the banks of the Zambezi. . . .

DISCOVERY OF SOUTH AFRICA.

. . . . . . What led to the discovery of America led also to the discovery, exploitation, and colonization of South Africa. In the 15th century the great Eastern trade with Europe was carried on by the Venetian Republic—Venice was the gate from West to East, and her fleets, richly laden with goods brought down to the shores of the Mediterranean in caravans, supplied Europe with the luxuries of the Orient. It was in that century that Portugal rose to prominence as a maritime power; and being anxious to enjoy at first hand some of the commerce which had brought such prosperity to Venice, Portugal determined to seek out an ocean pathway to the Indies. It was with this intention that Columbus sailed westward and discovered America, and that Bartholomew Diaz, sailing southwards, discovered the Cape of Good Hope. The story of these early voyages is full of gallant adventure, hardihood, and romance. . . . .

MISRULE OF THE DUTCH EAST INDIA COMPANY.

. . . . . . When it is borne in mind that the Dutch at the Cape were for one hundred and forty-three years under the rule of the Dutch East India Company, *i.e.*, for considerably more than half the period of their entire residence in that country, the importance of a correct appreciation of the nature of that rule to any student of South African history is obvious. No modern writer—not even the South African historian Dr Theal—approaches Watermeyer either in the completeness of his facts or the severity of his indictment. Referring to the policy of the company, Watermeyer says :—

"The Dutch colonial system as exemplified at the Cape of Good Hope, or rather the system of the Dutch East India Company (for the nation should not wholly suffer under the condemnation justly incurred by a trading association that sought only pecuniary profit), was almost without one redeeming feature, and was a dishonour to the Netherlands' national name. In all things political, it was purely despotic; in all things commercial, it was purely monopolist. The Dutch East India Company cared nought for the progress of the colony—provided only that they had a refreshment station for their richly laden fleets, and that the English, French, Danes, and Portuguese had not. Whatever tended to infringe in the slightest degree on their darling monopoly was visited with the severest penalties, whether the culprit chanced to be high in rank or low. An instance of this, ludicrous while grossly tyrannical, is preserved in the records. Commander van Quælbergen, the third of the Dutch governors of the colony, was dismissed from the government in 1667, and expelled the service of the company, because he had interchanged civilities with a French governor bound eastwards, the United Provinces being then at peace with France. . . . .

NATIVE RACES.

. . . . . . Before tracing the development and history of the country during the 19th century, and endeavouring to estimate the part that the European races have played, it

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is necessary to consider the native races of South Africa. The natives first encountered by the early voyagers and the Dutch settlers at the Cape were the Hottentots. They at this time occupied the Cape peninsula and surrounding country, and in the early days of the settlement caused the colonists a considerable amount of trouble. An extract from the diary of van Riebeek in 1659 will best illustrate the nature of the relations existing between colonists and natives at that time :—

"*3rd June.*—Wet weather as before, to the prevention of our operations. Our people who are out against the plundering Hottentots, can effect nothing, neither can they effect anything against us; thus during the whole week they have been vainly trying to get at our cattle, and we have been trying vainly to get at their persons; but we will hope that we may once fall in with them in fine weather, and that the Lord God will be with us."

The Hottentots, like the other negroid races of Africa, lived in clans or tribes and occupied kraals or villages. They tilled the soil to a limited extent, and possessed flocks and herds. A study of their ethnology, language, &c., will be found under HOTTENTOTS (see also under AFRICA : *Ethnology*). . . . .

THE GREAT TREK.

. . . . . . From 1836 to 1840 what is known as the Great Trek occurred. A number of the more turbulent spirits among the Boers, impatient of British rule, emigrated from Cape Colony into the great plains beyond the Orange river, and across them again to the fastnesses of the Zoutpansberg, in the northern part of the Transvaal. Various reasons for this trek have been assigned. Among the Boers of the Graaf Reinet and other frontier districts the tradition of rebellion against every form of civilized government had existed since the days of their first revolt against the East India Company. They now protested against what they considered the misrepresentation by the missionaries of their attitude towards the natives. They further objected that the wars on the Kaffre frontier were of a ruinous and disastrous character, and were not sufficiently dealt with by the Cape Government. Finally, what exasperated them beyond everything was the abolition of slavery. . . . .

THE LANGUAGE OF THE SOUTH AFRICAN DUTCH.

. . . . . . The history of the Dutch language in South Africa is intimately bound up with the history of the South African Dutch people. The basis of the language as spoken to-day is that 17th-century Dutch of Holland which the first settlers brought to the country; and as a matter of fact, although the Dutch of Holland and the Dutch of South Africa differ very widely to-day, Cape Dutch differs less widely from the Dutch language of the 17th century than from the modern Dutch of Holland. The tongue of the vast majority of the Dutch-speaking inhabitants may thus be said to be a degenerate dialect of the 17th-century Dutch of Holland, with a very limited vocabulary. The limiting of the vocabulary is due to two reasons. In the first place, the early settlers were drawn principally from the peasant class, being chiefly discharged soldiers and sailors; and, further, when once settled, the necessity for making the language intelligible to the natives, by whom the settlers were surrounded, led to a still further simplification of speech structure and curtailment of the vocabulary. There thus grew up an ungrammatical dialect of Dutch, suited only to the most ordinary requirements of the everyday life of a rural population. It became a language with neither a syntax nor a literature. At the same time it remained in character almost entirely Dutch, no French—in spite of the incorporation into the population of the Huguenot emigrants—and only a few Malay words, finding a place in the Taal. But side by side with this language of everyday life a purer form of Dutch has continued to exist and find its uses under certain conditions. . . . .

THE FIRST GERMAN COLONY.

. . . . . . The year 1883 saw the introduction of another European Power into South Africa. The German flag was hoisted over Germany's first colony on the shores of Angra Pequeña Bay, in Damaraland. German missionaries had been settled on this coast for some time, and had previously on more than one occasion asked both the Imperial and Cape Colony Governments for protection. In 1878 Sir Bartle Frere had urged the British Government to respond to these appeals, saying that if they were neglected Germany would certainly step in. The result was the annexation to Great Britain at that time of Walfish Bay, with a small strip of territory adjoining. This port was handed over to Cape Colony in 1884. Meanwhile the colonial party in Germany had used their influence to obtain further expansion, and in August of 1884 Germany finally annexed 322,450 square miles of country, with a coast-line of 930 miles, excluding the small strip of British territory in the vicinity of Walfish Bay. The greater portion of German South-West Africa is a desert and barren country, and at the time of annexation was stated to contain between 2000 and 3000 white inhabitants and about 200,000 natives, chiefly Bantu. In September of the same year a German explorer, Herr Einwald, proposed to take possession on behalf of Germany of St Lucia Bay, on the coast of Zululand. After some correspondence between Great Britain and Germany, it was eventually arranged that Germany should make no annexation on the east coast of Africa south of Delagoa Bay. The whole of Zululand is now a portion of the colony of Natal. . . . .

LAW IN SOUTH AFRICA.

. . . . The basis of the common law of British South Africa is the Roman-Dutch law as it existed in Holland at the end of the 18th century. This was simply the old Roman jurisprudence embodied in the legislation of Justinian, modified by custom and legislative decrees during the course of the centuries which witnessed the growth of civilization in Europe; and it is to all intents and purposes the jurisprudence which was the foundation of the Code Napoleon. It was in part closely akin to the "modern Roman law" which is practised widely over the continent of Europe, and even in Scotland, at the present day. The authorities upon the common law in South Africa are: the Dutch commentators upon the civil law, the statute law of Holland, the decisions of the Dutch courts, and, failing these, the *corpus juris civilis* itself.

In the century which has elapsed since the establishment of British rule at the Cape the law has been considerably modified and altered, both by legislation and by judicial decisions, and it is not too much to say that at the present time there exists hardly any material difference in principle over the greater part of the field of jurisprudence between the law of England and the law of South Africa. . . . .

STANLEY ON THE CONGO.

. . . . . . Claims, annexations, and occupations were in the air, and when in January 1879, Mr Stanley left Europe as the accredited agent of King Leopold and the Congo Committee, the strictest secrecy was observed as to

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his real aims and intentions. The expedition was, it was alleged, proceeding up the Congo to assist the Belgian expedition which had entered from the east coast, and Mr Stanley himself went first to Zanzibar. But in August 1879 Mr Stanley found himself again at Banana Point, at the mouth of the Congo, with, as he himself has written, "the novel mission of sowing along its banks civilized settlements to peacefully conquer and subdue it, to re-mould it in harmony with modern ideas into national states, within whose limits the European merchant shall go hand in hand with the dark African trader, and justice and law and order shall prevail, and murder and lawlessness and the cruel barter of slaves shall be overcome." The irony of human aspirations was never perhaps more plainly demonstrated than in the contrast between the ideal thus set before themselves by those who employed Mr Stanley, and the actual results of their intervention in Africa. Mr Stanley founded his first station at Vivi, between the mouth of the Congo and the rapids that obstruct its course where it breaks over the western edge of the central continental plateau. Above the rapids he established a station on Stanley Pool and named it Leopoldville, founding other stations on the main stream in the direction of the falls that bear his name. . . . .

. . . .

Sir H. H. Johnston writes on CENTRAL AFRICA in Vol. 26.

AFRICAN ISLANDS.

. . . . . . There are, around the coast, numerous islands or groups of islands, which are regarded by geographers as outliers of the African mainland. The majority of these African islands were occupied by one or other of the European Powers long before the period of continental partition. . . . .

. . . . . . St Helena in the Atlantic, Mauritius, and some small groups north of Madagascar in the Indian Ocean, are British possessions acquired long prior to the opening of the last quarter of the 19th century. Zanzibar, Pemba, and some smaller islands which the Sultan was allowed to retain were, as has already been stated, placed under British protection in 1890, and the island of Socotra was placed under the "gracious favour and protection" of Great Britain on 23rd April 1886. . . . .

THE CONFLICT OF TWO GREAT IDEAS.

. . . . . . The fact is that, from 1881 onwards, two great rival ideas came into being, each strongly opposed to the other. One was that of Imperialism—full civil rights for every civilized man, whatever his race might be, under the supremacy and protection of Great Britain. The other was nominally republican, but in fact exclusively oligarchical and Dutch. The policy of the extremists of this last party was summed up in the appeal which President Kruger made to the Free State in February 1881, when he bade them "Come and help us. God is with us. It is His will to unite us as a people"—"to make a united South Africa free from British authority." The two actual founders of the Bond party were Mr Borckenhagen, a German who was residing in Bloemfontein, and Mr Reitz, afterwards State Secretary of the Transvaal. Two interviews have been recorded which show the true aims of these two promoters of the Bond at the outset. One occurred between Mr. Borckenhagen and Mr Rhodes, the other between Mr Reitz and Mr T. Schreiner, whose brother became, at a later date, Prime Minister of Cape Colony. In the first interview Mr Borckenhagen remarked to Mr Rhodes: "We want a united Africa," and Mr Rhodes replied: "So do I." Mr Borckenhagen then continued: "There is nothing in the way; we will take you as our leader. There is only one small thing; we must, of course, be independent of the rest of the world." Mr Rhodes replied: "You take me either for a rogue or a fool. I should be a rogue to forfeit all my history and my traditions; and I should be a fool, because I should be hated by my own countrymen and mistrusted by yours." But as Mr Rhodes truly said at Cape Town in 1898, "The only chance of a true union is the overshadowing protection of a supreme power, and any German, Frenchman, or Russian would tell you that the best and most liberal power is that over which Her Majesty reigns." The other interview took place at the beginning of the Bond's existence. Being approached by Mr Reitz, Mr T. Schreiner objected that the Bond aimed ultimately at the overthrow of British rule and the expulsion of the British flag from South Africa. To this Mr Reitz replied: "Well, what if it is so?" Mr Schreiner expostulated in the following terms: "You do not suppose that that flag is going to disappear without a tremendous struggle and hard fighting?" "Well, I suppose not, but even so, what of that?" rejoined Mr Reitz. In the face of this testimony with reference to two of the most prominent of the Bond's promoters, it is impossible to deny that from its beginning the great underlying idea of the Bond was an independent South Africa. . . . .

FABLED ANTILLES.

From the Articles (4 pages) by JOHN GUNN and F. CUNDALL, Secretary to the Institute of Jamaica.

THE ORIGIN OF THE NAME WEST INDIES.

West Indies.—. . . . . This important archipelago received the name of the West Indies from Columbus, who hoped that, through the islands, he had found a new route to India. It is also sometimes known as the Antilles (a name, however, more properly applied to a part than to the whole), as Columbus, on his arrival here, was supposed to have reached Antilla, a fabled country, said to lie far to the westward of the Azores, which found a vague and uncertain place on the maps and charts of many geographers before that time. . . . .

NATURE OF GOVERNMENT

. . . . . . The British West India colonies are either Crown colonies—that is to say, their government is absolutely under the control of the British Colonial office, the official members of their councils predominating, and the unofficial members being nominated by the Crown, as in the Windward and Leeward Islands—or they have a measure of representative government, as in the Bahamas, Barbados, British Guiana, Trinidad, and Jamaica, in which all or part of the legislatures are elected and are more or less independent of Crown control. The laws of the various colonies are English, with local statutes to meet local needs. The governors and high officials are appointed by the Crown; other officials are appointed by the governor. Each governor acts under the advice of a privy council. . . . .

PRODUCTIONS.

. . . . . . The great change of the last quarter of the 19th century has been the further decline of sugar cultivation and the development of that of bananas and other fruits, and in Trinidad and Grenada, of cacao. Of the islands, Barbados, Antigua, St Kitts, and Nevis are extremely well fitted for the cultivation of sugar, and hardly for that of any other product valuable for exportation. In 1902 Martinique and St Vincent suffered severely from volcanic eruptions. With a view to the improvement of agriculture in Barbados and the Windward and Leeward Islands in particular—and throughout the British West Indies generally—a Commissioner of Agriculture for the West Indies has been appointed at the expense of the British Exchequer, having his headquarters at Barbados. The general movement of trade is towards the United States (where most of the British West Indies find the best

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For further particulars as to the West Indies, see articles in the Tenth Edition on CUBA, JAMAICA, HAYTI, and the other islands.

markets for their produce) at the expense of Great Britain. In order to foster trade with the mother country, a direct line of subsidized steamers was started to Jamaica in 1901. . . . . .

. . . . Pimento is peculiar to Jamaica. But it is to the agricultural resources of the islands that the greatest importance attaches. For centuries almost the whole care of the planters was bestowed upon the cultivation of the sugar-cane and tobacco plant, but since the emancipation of the slaves and the fall in the price of sugar attention has been turned to the production of other and more varying crops. Perhaps this change has been most marked in the trade which has now sprung up in fruit, which is very large, and annually increasing. Sugar, however, is still the staple product, and has for some time been grown in considerable quantities on the small holdings of the Negroes and other labourers. Crops of tobacco, beans, pease, maize, and Guinea corn are also becoming popular, and a species of rice, which requires no flooding for its successful propagation, is largely produced. *Hymenachne striatum* covers many of the plains, and affords food for numerous herds of cattle. . . . .

We are accustomed to talk of our Colonial Possessions without a clear conception of what the phrase includes. Here is a complete list of BRITISH POSSESSIONS from the TENTH EDITION of the ENCYCLOPÆDIA BRITANNICA.

The following list of British colonies and dependencies shows the date and manner of their acquisition :—

Name.	Date.	Method of Acquisition.
Newfoundland	1583	Possession taken by Sir H. Gilbert for the Crown.
17th Century.		
St Helena	1600	Captured. Settled by East India Coy. 1651. Government vested in British Crown, 1833.
Barbados	1605	Settlement.
Bermudas	1609	,,
Prince Edward Is.	1626	,, Ceded to France 1632; recovered 1713.
Nova Scotia	1626	,,
New Brunswick	1626	,,
St Christopher	1623	,, Ceded to France; recovered 1713.
Nevis	1628	,,
Bahamas	1629	,,
Gambia	1631	,, A second time in 1817.
Antigua	1632	,,
Leeward Is.	1632	,,
Jamaica	1655	Conquered.
Gold Coast	1661	Settlement.
N.-W. Territories of Canada	1670	Settlement under Royal Charter of Hudson Bay Coy. Purchased from Imp. Govt. 1869, and transferred to Canada 1870.
18th Century.		
Gibraltar	1704	Capitulation.
Ontario	1759-90	,,
Quebec	1759-90	,,
Dominica	1763	,,
St Vincent	1763	,,
Grenada	1763	,,
Windward Is.	1763	,,
Tobago	1763	,,
Falkland Is.	1765	Settlement.
Honduras	1783-86	Treaty.
Sierra Leone	1787	Settlement.
N. S. Wales	1788	,,
Ceylon	1795	Capitulation.
Trinidad	1797	,,
19th Century.		
Malta	1800	Capitulation.
B. Guiana	1803	,,
St Lucia	1803	,,
Tasmania	1803	Settlement.
Cape of Good Hope	1806	Capitulation.
Seychelles	1806	,,
Mauritius	1810	Capitulation.
Ascension and Tristan d'Acunha	1815	Military occupation.
West Australia	1829	Settlement.
South Australia	1836	,,
New Zealand	1840	Settlement and treaty.
Hong-Kong	1843-61	Treaties. Kowloon on the mainland added in 1861.
Natal	1844	By separation from Cape.
19th Century—continued.		
Labuan	1846	Cession.
Turks and Caicos Is.	1848	Separation from Bahamas.
Victoria	1851	Separation from N. S. Wales.
B. Columbia	1858	Settlement under Hudson Bay Coy. Transferred to Crown 1869. Entered Canadian Confederation 1871.
Straits Settlements	1858	Vested in Crown by E. I. Coy. Transferred from India to Colonial possessions, 1867.
Queensland	1859	By separation from N. S. Wales.
Lagos	1861	Cession.
Manitoba	1870	By separation from N.-W. Territory.
Fiji	1874	Cession.
W. Pacific Islands, including Union, Ellice, Gilbert, Southern Solomon, and other groups	1877	By international agreement. High commission created by Order in Council, giving jurisdiction over islands not included in other Colonial Governments, nor within jurisdiction of other civilized powers. Tonga and Cook Islands annexed to New Zealand 1900.
Cyprus	1878	Occupied by treaty.
North Borneo	1881	Treaty and settlement under Royal Charter.
Niger Coast or S. Nigeria	1884	Protectorate declared.
B. New Guinea	1884	,, ,,
Bechuanaland	1885	,, ,,
Nigeria	1886	Treaty, conquest, and settlement under Royal Charter. Transferred to Crown, incorporated with Niger Coast Protectorate and divided into N. and S. Nigeria, 1900.
Somaliland	1887	Protectorate declared.
Sarawak	1888	,, ,,
Brunei	1888	,, ,,
British East Africa	1888	Treaty, conquest, and settlement under Royal Charter. Transferred to Crown 1895.
Rhodesia	1889	Treaty, conquest, and settlement under Royal Charter.
British Central Africa	1891	Protectorate declared.
Federated Malay States	1874-95	Treaty.
Uganda	1894-96	Protectorate declared.
Pacific Islands—Christmas, Fanning, Penrhyn, Suwarrow	1898	Annexed for purposes of projected Pacific cable.
Wei-hai-Wei	1898	Lease from China.
Orange River Colony	1900	Annexation.
Transvaal	1900	Annexation.

In the Pacific there are, in addition to the possessions already mentioned, Bauman Islands, Bakir Island, Bell Cay, Bird Island, Bramble Cay, Caroline Island, Cato Island, Coral Island and Dudosa, Danger Island, Ducie Island, Flint Island, Howland Island, Humphrey Island, Jarvis Island, Lihow Island, Little Scrub Island, Malden

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Island, Manihiki Islands, Nassau Island, Palmerston Island, Palmyra Island, Phœnix Group of Islands, Pitcairn Island, Purdy Group, Raine Island, Rierson Island, Roggewein Island, Sophia Island, Starbuck Island, Surprise Island, Teinhoven Island, Vestoc, Washington or New York Island, Willis Group, Wreck Reef, Macquarie Island, Rotuma Island, and islands adjacent to British New Guinea. Among the dependencies of New Zealand should be mentioned the Kermadec Islands.

In the Indian Ocean there are, besides the colonies already mentioned, Seychelles, Rodrigues, the Chagos Islands, St Brandon Islands, Amirante Islands, Aldabra and some other small groups. There are also the Kuria-Muria Islands, the Maldive Islands, and the Ashmore Islands.

In America there is all land which lies to the north of the Canadian provinces, with the exception of the United States territory of Alaska and its dependencies.

The Indian section of the empire was acquired during the same three centuries under a royal charter granted to the East India Company by Queen Elizabeth in 1600. It was transferred to the Imperial Government in 1858, and Queen Victoria was proclaimed empress under the Royal Titles Act in 1877. The following list gives the dates and method of acquisition of the centres of the main divisions of the Indian empire. They have, in most instances, grown by general process of extension to their present dimensions.

The nine provinces are :—

Name.	Date.	Method of Acquisition.
Madras	1639 to 1748	By treaty and subsequent conquest. Fort St George, the foundation of Madras, was the first territorial possession of the E. I. Coy. in India. It was acquired by treaty with its Indian ruler. Madras was raised into a presidency in 1683; ceded to France 1746; recovered 1748.
Bombay	1608 to 1685	Treaty and cession. Trade first established 1608. Ceded to British Crown by Portugal 1661. Transferred to E. I. Coy. 1668. Presidency removed from Surat 1685.
Bengal	1633 to 1765	Treaty and subsequent conquests. First trade settlement established by treaty at Pipli in Orissa 1633. Erected into presidency by separation from Madras 1681. Virtual sovereignty announced by E. I. Coy., as result of conquests of Clive, 1765.
N.-W. Provinces and Oudh	1764 to 1856	By conquests and treaty through successive stages, of which the principal dates were 1801–3–14–15. In 1832 the nominal sovereignty of Delhi, till then retained by the Great Mogul, was resigned into the hands of the E.I. Coy. Oudh, of which the conquest may be said to have begun with the battle of Baxar in 1768, was finally annexed in 1856. It was attached as a commissionership to the N.-W. Provinces in 1879.
Central Provinces	1802–17	By conquest and treaty.
Assam	1825–26	Conquest and cession.
Burma	1824–52	Conquest and cession.
Punjaub	1849	Conquest and annexation. Made into distinct province 1859.
N.-W. Frontier Province	1901	Subdivision.

The senior commissionerships are :—

Name	Date	Method
Ajmere and Merwara	1818	By conquest and cession.
Coorg	1834	Conquest and annexation.
British Baluchistan	1841-76	Conquest and treaty.
Andaman Islands.	1858	Annexation.

The following is a list of the principal Indian states under the control of the British Government :—

Haidarabad. Kashmir.
Baroda. Sikkim.
Mysore. Shan States.

Rajputana States, including
Udaipur. Dholpur.
Jodhpur. Alwar.
Bikaner. Jhalawar.
Jaipur (and feudatories). Tonk.
Kotah.
Bhurtpur.

Central Indian States, including
Indore. Bhopal.
Rewa. Gwalior.

Bombay States, including
Cutch. Khairpur (Sind).
Kolhapur (and dependencies).

Madras States, including
Travancore. Cochin.

Central Provinces States
Bastar.

Bengal States
Cooch Behar. Hill Tipperah.

N.-W. Provinces States, including
Rampur. Garhwal.

Punjaub States, including
Patiala. Sirmur (Nahan).
Bahawulpur. Maler Kotla.
Jind. Faridkot.
Nabha. Chamba.
Kapurthala. Suket.
Mandi. Kalsia.

THE INDEX' and THE COLONIES

Fruit borders **12** 268d; canned **26** 558d; farming at Woburn **28** 532c; and flower farming **28** 528a; Garden Calendar **12** 290a; hothouse culture **12** 223a; **28** 534c; importation of **28** 528c; storing of **12** 227b.

Meat: canned **26** 559a; frozen **32** 112c; imported (tables) **25** 185c; methods of cooking **6** 332a; poisonous, tainted, or putrid **15** 782a; preserved **19** 707c; protozoa in **19** 855c; tuberculosis **24** 204b.

The importation of meat and fruit into the United Kingdom from abroad is a phenomenon of commercial and economic significance. It may well occur to us to wonder what the statistics on this subject would be. At first thought we might imagine that we have only to turn to the articles Meat and Fruit to acquire the information we seek. But if we know the *Encyclopædia Britannica* well enough we shall remember that the subject of Fruit is dealt with under FRUIT and FLOWER RAISING, while that of Meat must be sought under CATTLE. To save the time which such a close acquaintance with the nature of the work necessitates, the index entry has been so devised as to refer the reader immediately not only to articles, but to the matter of any subject wherever it occurs—in its own article or elsewhere.

The entry **28** 528c in the opposite column guides us to the following interesting passage in the Tenth Edition.

"In 1901 the total expenditure on raw fruit imported into the United Kingdom was £7,623,500, the largest items being £2,119,726 for oranges, £1,182,798 for apples, £1,090,477 for almonds and other nuts used as fruit, £875,542 for bananas, and £694,942 for grapes" (Vol. 28, p. 528).

On referring to the entry **25** 185c quoted in the opposite column we shall find valuable tabular statements concerning the importation of meat.

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BRITISH INDIA

"On January 1st, 1877, Queen Victoria was proclaimed Empress of India at a durbar of unequalled magnificence, held on the historic 'ridge' overlooking the Moghal capital of Delhi."

Besides the articles devoted to the Native Princes, the following are some of the British Viceroys and Generals treated each under a separate heading in the Tenth Edition: CLIVE, HASTINGS, HAVELOCK, STRATHNAIRN, CANNING, WELLESLEY, NAPIER, ROBERTS, DALHOUSIE, NICHOLSON, NORTHBROOK, ELPHINSTONE, LYTTON, RIPON, NEVILLE CHAMBERLAIN, LANSDOWNE, LAWRENCE, DUFFERIN.

AUSTRALIA

'So they asked Lord Russell how much he claimed of Australia. 'The whole of it,' was the prompt answer. This was only sixty years ago."

The following, among other articles in the Tenth Edition, deal with Australia and Australian affairs: MELBOURNE, VICTORIA, NEW SOUTH WALES, GOLD, MURRAY RIVER, QUEENSLAND, TARIFFS, LORD JOHN RUSSELL, BOTANY BAY, COOK, TABOO, COLONY, POLYNESIA, CHAMBERLAIN, BRISBANE, FORESTS AND FORESTRY, WINE.

The Tenth Edition tells you about:

GREAT PIONEERS OF EMPIRE

Albuquerque.
Anson.
Baffin.
Balboa.
Banks.
Barents.
Benbow.
Bligh.
Brisbane.
Bruce, James.
Boscawen.
Burke, Robert O'Hara.
Burton.
Cabot, John.
Cabot, Sebastian.
Champlain.
Collingwood.
Columbus.
Cook.
Cornwallis.
Cortes.
Dampier.
Davis.
De Ruyter.
Duquesne.
Flinders.
Franklin.
Frobisher.
Hannibal.
Hanno.
Hasdrubal.
Hawke.
Hawkins.
Hood.
Hudson.
Humboldt.
Ibn Batuta.
Keppel.
King.
Lafayette.
La Perouse.
Livingstone.
Magellan.
Park, Mungo.
Parry.
Pilgrim Fathers.
Pizarro.
Polo, Marco.
Raleigh.
Rupert, Prince.
Speke.
Tasman.
Vancouver.
Vespucci.
Wolfe.

The Tenth Edition tells you:

THE HISTORY OF COLONIZING AND SEA POWER

Phœnician Colonies.
Roman Colonies.
Roman Control of the Sea.
Greek Colonies.
Armada.
Spanish Colonies.
Royal Navy of Henry VIII.
English Navy.
"Great Eastern."
French Colonies.
Dutch in Asia.
Dutch East India Company.
Dupleix in India.
Portuguese Colonies.
The Company of Merchant Adventurers.
South Sea Company.
Hudson Bay Company.
The Colonization of Africa.
Piracy.
Blockade.
Buccaneers.
Maroons.
Privateering.
Maritime Law.
Right of Search.
European Navies.
Navigation Act (1651).

CANADA

"The contribution made by Canada of two contingents of troops for service under Imperial direction in South Africa is the most important military event in the later history of the Dominion. The forces sent by the Dominion were supplemented by a body of horse raised in North-Western Canada, and equipped and paid by a Canadian, Lord Strathcona."

Of the numerous articles in the Tenth Edition concerning Canada and Canadian affairs the following are a few: ELGIN, DURHAM, SEAL FISHERIES, FUR, MACDONALD, RAILWAYS, ARGYLL, WHEAT, TREATIES, GOLDWIN SMITH, RED RIVER, HUDSON BAY, SIR WILFRID LAURIER, WOLFE.

SOUTH AFRICA

"Mr. Rhodes endeavoured to demonstrate to the colonists, Dutch and British alike, that those very privileges which theoretically are associated with republicanism were practically more fully obtainable in an enlightened self-governing British colony."

The history of South Africa from the earliest settlements to the end of the Boer War is told in the Tenth Edition of the *Encyclopædia Britannica.* The articles: SALISBURY, CHAMBERLAIN, RHODES, KRUGER, long as they are, can only be regarded as footnotes in comparison with the articles SOUTH AFRICA, TRANSVAAL, CAPE COLONY, AND AFRICA.

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AGRICULTURE

And herein the desire of King Henry the Seventh (whereof I have spoken largely in the history of his life) was profound and admirable in making farms and houses of husbandry of a standard—that is, maintained with such a proportion of land unto them as may breed a subject to live in convenient plenty and no servile condition, and to keep the plough in the hands of the owners and not mere hirling
—BACON.

HE words "English Agriculture" bring to the mind the mental picture of falling rents, starvation wages, ruined outbuildings and tithes unpaid. There is indeed no questioning the fact that the artisan's cheap loaf has cost the farmer dear. But if the lesson Cobden had to teach us was, that, with our teeming population, cereals cannot be grown to pay in the mother country, there is none the less to-day a very real importance in English Agriculture which is perhaps only just being understood. It is in the direction of her colonies, of the Britain Beyond the Sea, that agriculture assumes a position of paramount interest, greater than it had when wheat was 84s. a quarter. If mutual annihilation be the ultimate object of the Tariff War of nations, our most potent weapon for fighting our enemies and becoming self-supporting will be a federation of the interests of the mother country and her colonial children—not the least vital result of which will be the development of the limitless agricultural resources of the Empire.

On the other hand, there are signs that the farmer is realizing that new circumstances call for new methods. If he cannot grow cereals to pay, there are branches of farming which will pay—nowhere better—in the mother country. You cannot read the fifty-page article AGRICULTURE contributed to the Tenth Edition of the Encyclopædia Britannica without realizing how great a stake the agriculturist still has in this country. In horse-breeding and in stock-raising England still remains without a rival. In the article POULTRY FARMING there is an account more than encouraging of the profits which are to be made out of rearing chickens, and one finishes reading with the conviction that given thrift and assiduity, the countryman who starves on his wheat-crop may keep a horse and gig on his poultry-run. The article FRUIT AND FLOWER FARMING, again, calls much needed attention to the fortunes which await the intelligent cultivator who will but realize his opportunities. But it would be impossible to mention half the articles in the Tenth Edition which, valuable as they are in affording the latest statistics, encourage the friends of agriculture to hope for better days. DAIRY FARMING, FORESTS AND FORESTRY, HOPS AND HOP-GROWING, are but a few of the subjects dealt with, while to the beautiful science of HORTICULTURE are devoted no less than eighty-four pages. It is in such a study as this last that the Index now added to the Encyclopædia is of much service in directing the enquirer to that part of the immense article in which he will find the information desired or the explanation of some technical term met with in reading.

514 TONS OF NARCISSUS.

From the Article (8 pages) by WILLIAM FREAM, LL.D., F.R.S.

Fruit and Flower Farming.— . . . . . . The Scilly Isles are important as providing the main source of supply of flowers to the English markets in the early months of the year. This trade arose almost by accident, for it was about the year 1870 that a box of narcissi sent to Covent Garden Market, London, realized £1; and the knowledge of this fact getting abroad, the farmers of the isles began collecting wild bulbs from the fields in order to cultivate them and increase their stocks. Some ten years, however, elapsed before the industry promised to become remunerative. In 1885 a Bulb and Flower Association was established to promote the industrial growth of flowers. The exports of flowers in that year reached 65 tons, and they steadily increased until 1893, when they amounted to 450 tons. A slight decline followed, but in 1896 the quantity exported was no less than 514 tons. This would represent upwards of $3\frac{1}{2}$ million bunches of flowers, chiefly narcissi and anemones. Rather more than 500 acres are devoted to flower-growing in the isles, by far the greater part of this area being assigned to narcissi, whilst anemones, gladioli, marguerites, arum lilies, Spanish irises, pinks, and wall-flowers are cultivated on a much smaller scale. . . . .

[Never have romance and commerce been more happily combined than in the flower trade of the Scilly Isles as it is described in Dr FREAM'S comprehensive Article.]

THE CULTURE OF THE TULIP.

From the Article (84 pages) by M. T. MASTERS, M.D., F.R.S., and T. MOORE, late of Botanic Gardens, Chelsea.

Horticulture.— . . . . . . 71. The *Tulip* (Tulipa Gesneriana) is a native of the East, whence it was introduced into Europe about the middle of the 16th century. *Tulip.* About the year 1635 its culture was very engrossing; and, indeed, the rage for possessing rare sorts had become so great in Holland as to give rise to a strange species of gambling, known to the collectors of literary and scientific anecdotes by the name of Tulipo-mania. At present, though not to be met with in every garden, the finer tulips have yet some ardent cultivators, while certain varieties, as the early Duc Van Thol and its allies, and the double tulips of the Tournesol type, are much used for general garden decoration, and for forcing. The latter, however, spring from other species of the genus.

The florists' varieties of tulips, which have sprung from Tulipa Gesneriana, are arranged in separate classes named bizarres, byblœmens, and roses, according to their colour and marking. Tulips are readily raised from seeds, and the seedlings when they first flower are of one colour,—that is, they are self-coloured. Judged by the florists' rules, they are either good or bad in form, and pure or stained (white or yellow) at the base; the badly formed and stained flowers are thrown away, while the good and pure are grown on, these being known as "breeder" tulips. The breeder bulbs and their offsets may grow on for years producing only self-coloured flowers, but after a time, which is varied and indefinite, some of the progeny "break," that is, produce flowers with the variegation which is so much prized. The flower is then said to be "rectified"; it is a *bizarre* when it has a yellow ground marked with purple or red, a *byblœmen* when it has a white ground marked with violet or purple, or a *rose* when it has a white ground marked with rose colour. One of the most important of the properties of a fine florists' tulip is that the cup should form, when expanded, from half to a third of a hollow ball. . . . .

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GARDEN OPERATIONS.

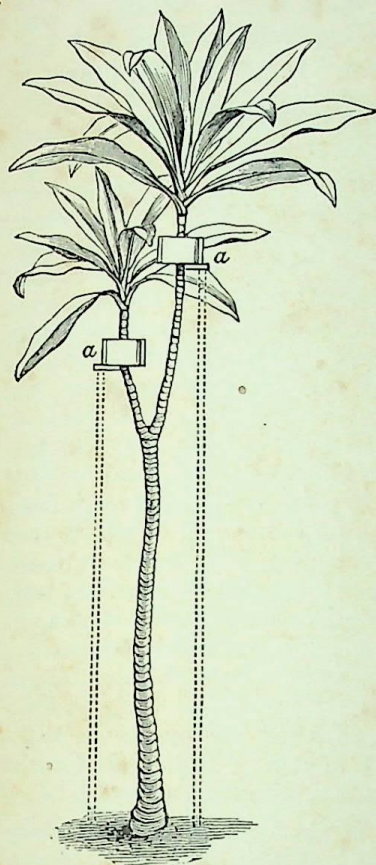
21. *Propagation.*—The increase of plants, so far as the production of new individuals of particular kinds is concerned, is one of the most important and constantly recurring of gardening operations. In effecting this, various processes are adopted, which will now be described.

Propagation.

Fig. 53.

. . . . . .

(9) *By Circumposition.*—When a plant is too high or its habit does not conveniently admit of its being layered, it may often be increased by what is called circumposition, the soil being carried up to the branch operated on. The branch is to be prepared by ringing or notching or wiring as in layering, and a temporary stand made to support the vessel which is to contain the soil. The vessel may be a flower-pot sawn in two, so that the halves may be bound together when used, or it may be a flower-pot or box with a side slit which will admit the shoot; this vessel is to be filled compactly with suitable porous earth, the opening at the slit being stopped by pieces of slate or tile. The earth must be kept moist, which is perhaps best done by a thick mulching of moss, the moss being also bound closely over the openings in the vessel, and all being kept damp by frequent syringings. Reid remarks of this method of propagation that he has effected it with clay and cow-dung, well mixed, after the bark had been taken off all round, and wrapt about with a double or triple swaddling of straw or hay ropes (*Scots Gardener*, 1721).

This process is sometimes found very useful in the case of choice conservatory plants which may be getting too tall for the house, such as a fine *Dracæna* (fig. 53) or *Yucca*. Such a plant may be operated on wherever the stem has become firm and woody; the top will not fail to make a fine young specimen plant, which might be removed in the course of about twelve months, while other shoots would no doubt be obtained from the old stem, which, with its head thus reduced, might be removed to quarters where it would not be an eyesore. The head would perhaps require steadying if the stem were loaded with a pot or box of soil, as at *a* in the figure. Mr Bain records (*Paxt. Mag. Bot.* xvi. 46) a successful experiment of this kind with a *Dracæna Draco* which was getting too tall for its position. . . . .

* * * * * * * * * * * *

THE CROSSING OF PLANTS.

. . . . . . Some of the most interesting results and many of the gardener's greatest triumphs have been obtained by hybridization, *i.e.*, the crossing two individuals, not of the same but of two distinct species of plants, as, for instance, two species of rhododendron or two species of orchid. It is obvious that hybridization differs more in degree than in kind from cross-fertilization. The occurrence of hybrids in nature explains the difficulty experienced by botanists in deciding on what is a species, and the widely different limitations of the term adopted by different observers in the case of willows, roses, brambles, &c. The artificial process is practically the same in hybridization as in cross-fertilization, but usually requires more care. To prevent self-fertilization, or the access of insects, it is advisable to remove the stamens and even the corolla from the flower to be impregnated, as its own pollen or that of a flower of the same species is often found to be "prepotent." There are, however, cases, *e.g.*, some passion-flowers and rhododendrons, in which a flower is more or less sterile with its own, but fertile with foreign pollen, even when this is from a distinct species.

* * * * * * * * * * * *

The above extracts are taken almost at random from the 84-page Article HORTICULTURE. To give some idea of the completeness of this, a list of its principal contents are here quoted.

[*The Article* POULTRY AND POULTRY FARMING (*9 pages*) *gives a most encouraging sketch of an industry steadily reviving in England.*]

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WHERE COTTON WILL GROW.

From the Article (50 pages) by W. FREAM, LL.D., and CHARLES W. DABNEY, Ph.D.

Agriculture.— . . . . . . Cotton is limited by climatic conditions to the States south of latitude 37° N. The essential features of the climate in this section are the long warm season and the peculiar distribution of the rainfall. Cotton is a sun plant. Fluctuations in yield per acre in a given place are less in the case of cotton than in any other product of the soil; in other words, a certain amount of sunlight produces a certain amount of cotton. This may be due to the greater uniformity of all the climatic conditions obtaining in the cotton belt; but the determining condition as between different sections is the amount of light and heat distributed over the required number of months. This period is ordinarily measured by the date of the last killing frost in the spring and of the earliest frost in the fall. Cotton-picking may be extended far into the winter, but the first killing frost stops the active growth of the plant, and by killing the blossoms and young bolls puts an end to the production of cotton for that season. Cotton requires for its development from six to seven months of favourable growing weather. It thrives in a warm atmosphere, even in a very hot one, provided it is moist and the transpiration does not overtax the leaves. The plant requires, however, an abundant supply of moisture during the growing stage. A rainfall increasing from the spring to the middle of summer and then decreasing to autumn is probably the most favourable condition for the production of this crop. These are exactly the conditions that prevail in the cotton States. Cotton grows more or less successfully on nearly all kinds of soil within this climatic belt. Light sandy soils, loams, heavy clays, and sandy "bottom lands" will all grow it, though not with equal success. Sandy uplands produce a short stalk, which bears fairly well. Clay and bottom lands grow a plant of large size, yielding less lint in proportion. The best soils for cotton are the medium grades of loam. The cotton soil should be of a quality to maintain very uniform conditions of moisture. Sudden variations in the amount of water supplied injure the plant decidedly. A sandy soil does not retain water; a clay soil maintains too much moisture and causes the plant to take on too rank a growth. The best soil for cotton, therefore, is a deep, well-drained loam. . . . . .

[*The Article* AGRICULTURE *reviews at great length the home and colonial prospects of farming.*]

THE VARIETIES OF ENGLISH HOPS.

From the Article (5 pages) by WILLIAM FREAM, LL.D., F.R.S.

Hops and Hop-growing.— . . . . . . At the beginning of the 19th century there were 290 parishes in Kent in which hops were cultivated. A century later, out of the 413 parishes in the county, as many as 331 included hop plantations. The hops grown in Kent are classified in the markets as "East Kents," "Bastard East Kents," "Mid Kents," and "Wealds," according to the district of the county in which they are produced. The relative values of these four divisions follow in the same order, East Kents making the highest and Wealds the lowest rates. These divisions agree in the main with those defined by geological formations. Thus "East Kents" are grown upon the Chalk, and especially on the outcrop of the soils of the London Tertiaries upon the Chalk. "Bastard East Kents" are produced on alluvial soil and soils formed by admixtures of loam, clay loams, chalk, marl, and clay from the Gault, Greensand, and Chalk formations. "Mid Kents" are derived principally from the Greensand soils and outcrops of the London Tertiaries in the upper part of the district. "Wealds" come from soils on the Weald Clay, Hastings Sand, and Tunbridge Wells Sand. As each "pocket" of hops must be marked with the owner's name and the parish in which they were grown, buyers of hops can, without much trouble, ascertain from which of the four divisions hops come, especially if they have the map of the hop-growing parishes of England, which gives the name of each parish. There has been a considerable rearrangement of the hop plantations in Kent within recent years. Common varieties, as Colegate's, Jones's, Grapes, and Prolifics, have been grubbed, and Goldings, Bramlings, and other choice kinds planted in their places. The variety known as Fuggle's, a heavy-cropping though slightly coarse hop, has been much planted in the Weald of Kent, and in parts of Mid Kent where the soil is suitable. In very old hop gardens, where there has been no change of plant for fifty or even one hundred years in some instances, except from the gradual process of filling up the places of plants that have died, there has been replanting with better varieties and varieties ripening in more convenient succession; and, generally speaking, the plantations have been levelled up in this respect to suit the demand for bright hops of fine quality. A recent classification of the varieties of English hops arranges them in three groups—(1) early varieties (*e.g.*, Prolific, Bramling, Amos's Early Bird); (2) mid-season or main-crop varieties (*e.g.*, Farnham Whitebine, Fuggle's, Old Jones's, Golding); (3) late varieties (*e.g.*, Grapes, Colgate's). . . .

[*A specially interesting contribution to the Tenth Edition is the Article* AGRICULTURAL MACHINERY, *of* 11 *pages, which records the great advances made in mechanical ploughing, cultivating, and harvesting implements.*]

THE CLIMATIC VALUE OF TREES.

From the Article (11 pages) by W. SCHLICH, C.I.E., F.R.S., Professor of Forestry, Cooper's Hill College.

Forests and Forestry.— . . . . . . In the economy of man and of nature forests are of direct and indirect value, the former chiefly through the produce which they yield, and the latter through the influence which they exercise upon climate, the regulation of moisture, the stability of the soil, the healthiness and beauty of a country, and allied subjects. The *indirect* utility will be dealt with first. A piece of land bare of vegetation is, throughout the year, exposed to the full effect of sun and air currents, and the climatic conditions which are produced by these agencies. If, on the other hand, a piece of land is covered with a growth of plants, and especially with a dense crop of forest vegetation, it enjoys the benefit of certain agencies, which modify the effect of sun and wind on the soil and the adjoining layers of air. These modifying agencies are as follows: (1) The crowns of the trees intercept the rays of the sun, and the falling rain obstructs the movement of air currents, and reduces radiation at night; (2) the leaves, flowers, and fruits, augmented by certain plants which grow in the shade of the trees, form a layer of mould, or humus, which protects the soil against rapid changes of temperature, and greatly influences the movement of water in it; and (3) the roots of the trees penetrate into the soil in all directions, and bind it together. The effects of these agencies have been observed from ancient times, and widely differing views

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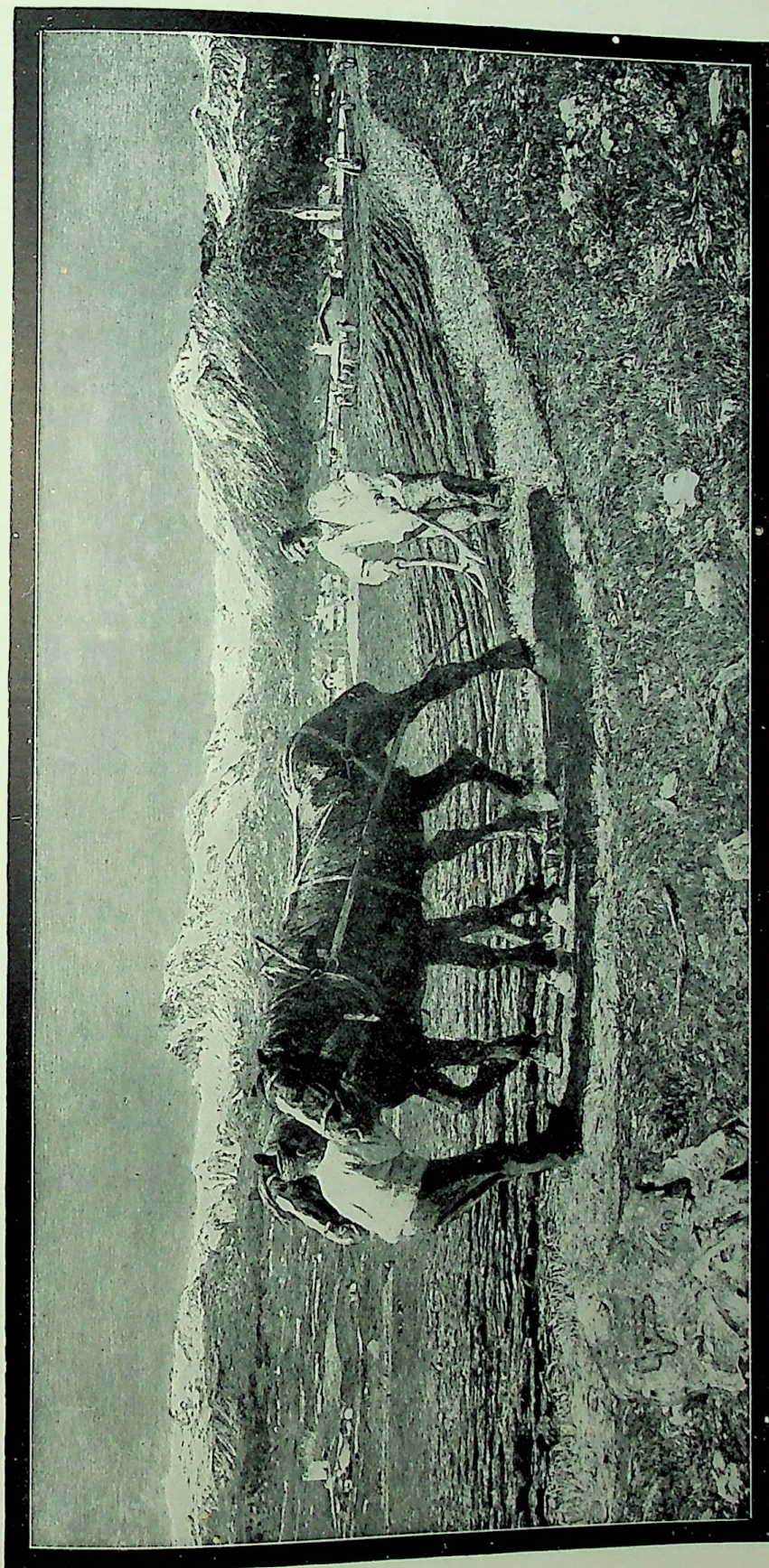
"Ploughing in the Engadine." By Giovanni Segantini.

(By permission of T. Fisher Unwin, London.)

The Article ENGADINE in the Tenth Edition is by Douglas W. Freshfield.

The death of Segantini in 1899 removed a painter who had successfully refuted the charge against Switzerland that it was a country lacking the atmosphere necessary for the painter's art. See the Article SEGANTINI by Henri Frantz in the Tenth Edition.

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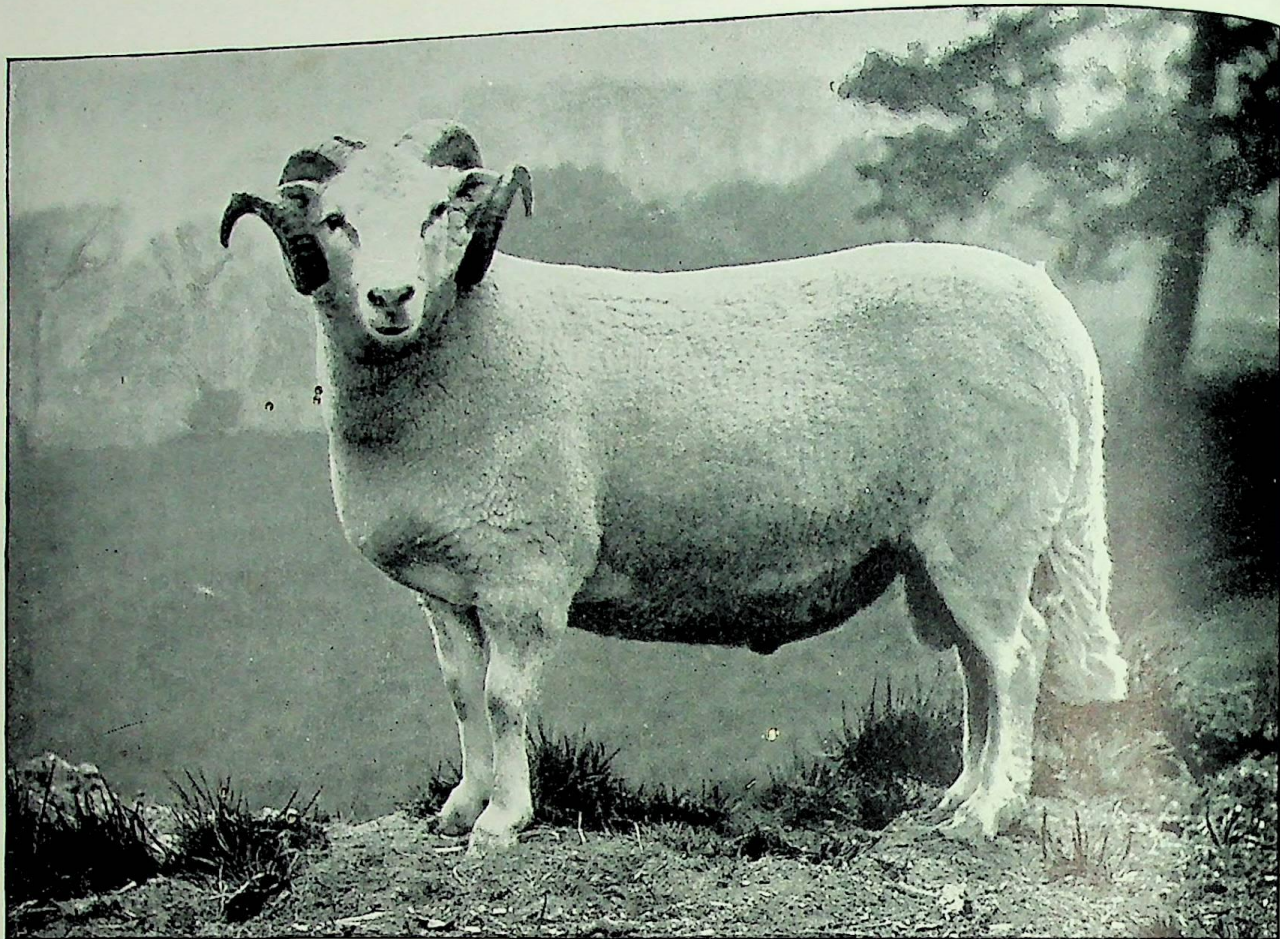
Photo by C. Reid, Wishaw, N.B.

WELSH MOUNTAIN RAM, "HERO II."

1st Prize, Royal Agricultural Society's Shows, Maidstone, 1899; York, 1900. The property of, and bred by, Mr J. Marshall Dugdale, Llwyn, Llanfyllin, Montgomeryshire.

Photo by C. Reid, Wishaw, N.B.

OXFORD DOWN RAM.

1st Prize, Royal Agricultural Society's Show, York, 1900. The property of, and bred by, Mr James T. Hobbs, Maisey Hampton, Fairford, Gloucestershire.

The Tenth Edition contains numerous illustrations of the various Breeds of Horses, Cattle, Sheep, Pigs, etc.

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have been taken of them. Of late years, however, more careful observations have been made at so-called parallel stations, that is to say, one station in the middle of a forest, and another outside at some distance from its edge, but otherwise exposed to the same general conditions, and in this way the following results have been obtained: (1) Forests reduce the temperature of the air and soil to a moderate extent, and render the climate more equable; (2) they increase the relative humidity of the air, and reduce evaporation; (3) they tend to increase the precipitation of moisture. As regards the actual rainfall, their effect in low lands is *nil* or very small; in hilly countries it is probably greater, but definite results have not yet been obtained, owing to the difficulty of separating the effect of forests from that of other factors. (4) They help to regulate the water supply, produce a more sustained feeding of springs, tend to reduce violent flood, and render the flow of water in rivers more continuous; (5) they assist in preventing denudation, erosion, landslips, avalanches, the silting up of rivers and low lands, and the formation of sand dunes; (6) they reduce the velocity of air currents, protect adjoining fields against cold or dry winds, and afford shelter to cattle, game, and useful birds; (7) they may, under certain conditions, improve the healthiness of a country, or help in its defence; (8) they increase the beauty of a country, and produce a healthy æsthetic influence upon the people.

The direct utility of forests is chiefly due to their produce, the capital which they represent, and the work which they provide. The principal produce of forests consists of timber and firewood. . . . .

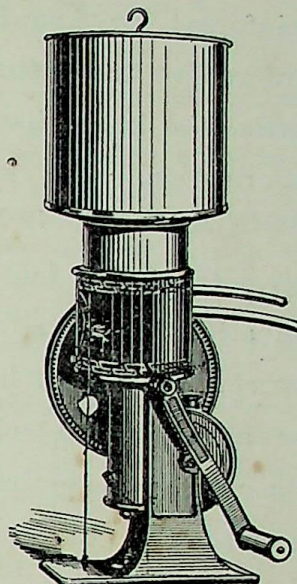
[*This Article draws much-needed attention to a branch of land-culture, to which the tendency in England is to attach too little value.*]

CREAM-SEPARATORS.

From the Article (45 pages) by W. FREAM, LL.D.

Dairy Farming — . . . . . . In the centrifugal cream-separator the new milk is allowed to flow into a bowl, which is caused to rotate on its own axis several thousand times per minute. The heavier portion which makes up the watery part of the milk flies to the outer circumference of the bowl, whilst the lighter particles of butter fat are forced to travel in an inner zone. By a simple mechanical arrangement the separated milk is forced out at one tube and the cream at another, and they are collected in distinct vessels. Separators are made of all sizes, from small machines dealing with 10 or 20 up to 100 gallons an hour, and worked by hand (Fig. 18), to large machines separating 150 to 440 gallons an hour, and worked by horse, steam, or other power. Separation is found to be most effective at temperatures ranging in different machines from 80° to 98° F., though as high a temperature as 150° is sometimes employed. . . . . .

Fig. 18.—Hand Separator.

[*These are but a few lines of an Article that fully maintains its interest throughout its forty-five pages.*]

AGRICULTURE and the INDEX.

Some notion of the minuteness as well as the comprehensiveness of the Index may be gathered from the adjoining extract of the entry SHEEP. The extent of the matter devoted to this subject in the Tenth Edition will at once be seen to be such as to defy a reader, unaided, to find his way to precise information on one particular breed of sheep, or one minute and none the less important item of knowledge. Hours of labour have thus been saved for him. The Index does not attempt to follow the plan of a dictionary in giving a brief and often unintelligible account of a rare breed; but it refers the reader to a passage from the context of which he will at once gather the nature of that rarity, and the circumstances and locality in which it is to be found. To have made a complete guide to the contents of Thirty-five Volumes, including 40,000,000 words of text, has been a formidable task, of which the results constitute a permanent saving of time and endless research to all those who use the national work of reference. Whether as a literary companion, or as a guide to a single fact in a single department of knowledge, the *Encyclopædia Britannica* may now be regarded as a work of unrivalled perfection.

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FOUR REASONS WHY THE FARMER SHOULD READ THE ENCYCLOPÆDIA BRITANNICA

The day of guesswork in farming has passed. In every detail of agriculture, skill alone is of small account unless reinforced by knowledge. To the progressive farmer the *Encyclopædia Britannica* is a mine of valuable information. The long article **AGRICULTURE (126 pages)** gives the fullest information on all matters vital to the farmer, whether at home or abroad. The soils, the climate, the grains grown, the implements used, in other countries are described in the Tenth Edition.

If he tries to grow cereals, if he is even to get a bare living from his industry, it is essential that he should read all he can on the subject: such articles as WHEAT, MAIZE, BARLEY, OATS, MILDEW, WEEVIL. And to all subjects of farming—POULTRY, GRASSES, BEES, HONEY, WAX, CATTLE, DAIRY, CIDER, SHEEP, MILK, BUTTER, CHEESE, FRUIT AND FLOWER FARMING, BREEDS AND BREEDING, he will find articles devoted in the Tenth Edition.

The farm-seeker who cannot buy but must lease, using his capital to work the farm, will obtain valuable hints from the Tenth Edition if he reads the articles LANDLORD AND TENANT, RENT, AGRARIAN LAWS. He will save money, too, if he reads in the volumes all written there on farm buildings in the article AGRICULTURE, and about machinery and tools, &c., under AGRICULTURAL MACHINERY. He should read carefully the articles GUANO and MANURES, and that on IRRIGATION.

And he must not forget what ever-increasing value the timber of England has. The cultivation of trees can be closely studied in the *Encyclopædia Britannica* in the articles FORESTS AND FORESTRY, FOREST ADMINISTRATION, ARBORICULTURE, SAWMILLS; and articles on the trees, OAK, ELM, PINE, FIR are important to those who would profit by timber. If the farmer turns to market-gardening, he should read HORTICULTURE, an article which is nearly **100 pages** long.

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INDUSTRIES

We are more industrious than our fathers, because in the present time the funds destined for the maintenance of industry are much greater, in proportion to those likely to be employed in the maintenance of idleness, than they were two or three centuries ago.—ADAM SMITH.

HE industrial side of human activity is at once the least obvious as it is the most essential to all of us. We are apt to forget Industry, that sleepless giant who toils week in and week out, every month, every year, to supply our daily needs. The young débutante dressing herself in dainty muslin for a garden party forgets the cotton operative who spends her days amid a clang of machinery in order to supply the delicate fabric. As we gather round the bright fire and luxuriously heap on the coals, we forget the patient miner toiling through the hours of sunlight in the bowels of the earth, wearily picking out the lumps we so lavishly burn. Every match struck to light a cigar or pipe, every lump of sugar melted in a cup of tea, the spoon with which we stir it, the sugar-basin, the tea-pot,—all represent for those who think the picture of ceaseless human toil. No one, not even the least imaginative of us, can fail to feel an interest in the industrial side of life, and in the pages of the Encyclopædia Britannica all the poetry of Industrialism lies open to the reader. Here in the Tenth Edition he will find every trade described, the past and present of every industry related. By the magic of its pages he can at will be transported to the noisy iron foundries of the Midlands, to the indigo plantations of Rajputana, to the tea gardens of Assam; or he can descend with the miner into the earth, or help the mechanic to forge some huge gun at the Elswick works.

There have been grouped together below a few representative extracts from some of the countless subjects of industrial interest which are dealt with in the Tenth Edition. To make a selection more comprehensive would have been impossible; for the object of this pamphlet is to show the reader how each department of human activity, each country, each science, each creed, each achievement of the engineer or the electrician, of the musician or the author, receives exhaustive treatment in the pages of the Encyclopædia Britannica. Not one, but many pamphlets would have to be filled to make it possible for the reader to understand how vast a library of reference on every subject he acquires in the Tenth Edition.

A MIRACLE OF SPEED.

From the Article (2 pages) by THEODORE L. DE VINNE, Author of "The Invention of Printing."

Printing Presses.— . . . . . . The *Rotary Art Press* (first made by R. Hoe & Co. for the printing of the illustrated formes of the *Century Magazine*) is simpler and more manageable. Sixty-four electro-typed plates, curved and attached to a cylinder about 30 inches in diameter, are inked by 16 rollers. Impression is made against a cylinder of similar size which revolves at the same rate of speed. The sheets are fed by hand. Unlike all other hand-fed cylinders, this machine has no lost motion, for printing is continuous. Although it does four times the work of the stop-cylinder, the rotation of the cylinder is no faster, and the quality of the press-work is really superior. For printing the plain type pages and advertising pages of this magazine a simpler form of web press is used, which is not so rapid as the web press of newspapers; but it performs more operations and does more accurate work. At every revolution it puts on the delivery-table 64 pages in exact register, truly cut, folded, and ready for the binder. Small cylinder machines are also made for printing cards, numbered railway tickets, pamphlets, stock and market reports, proofs for proof-readers, matrixes for stereotype plates, and for aluminium plates to be printed by lithographic process. Improvements in cylinders for book-work have been made by several European mechanicians. At the Paris Exposition of 1900 Marinoni exhibited a perfecting cylinder which printed at one revolution at a rapid rate two colours on either side of the sheet. Alauzet and Voirin, of Paris, Rochstrop and Schneider-Nachf, of Dresden, König and Bauer, of Oberzell, and Schelter and Giesecke are makers of approved book and job printing machines. . . . .

[*The history of printing is given in the thirty-page Article* TYPOGRAPHY. *See also* TYPE-SETTING MACHINES, ENGRAVING, ELECTRO-METALLURGY, NEWSPAPERS, BOOK-PRINTING.]

THE MANUFACTURE OF CALICO.

From the Article (12 pages) by JAMES PATON.

Bleaching.— . . . . . Of the two great staples, cotton and linen, to the whitening of which the art of the bleacher is directed, cotton is the more easily and expeditiously bleached. The basis of all vegetable fibres is cellulose or ligneous tissue, a pure white substance, and it is to obtain this body in a state of purity, free from the resinous matter naturally associated with it as well as from adventitious impurities imparted in the process of spinning and weaving, that is the object of bleaching. The operations, although apparently complex and numerous, are essentially simple, though frequently repeated, and the greatest variety of detail is connected with the finishing of cloth, which is in reality a separate industry, frequently conducted in distinct establishments under the name of calendering and finishing works. Bleaching proper resolves itself into washing with suitable detergents, and subjecting the washed material to the influence of chlorine, whereby the colouring matter either belonging to the fibre or imparted to it is oxidized and discharged.

. . . .

Chemicking.—When the previous processes have been efficiently carried out, the cloth will, at this point, have attained a considerable appearance of whiteness and purity. The "chemicking" or liquoring with bleaching-powder which it now undergoes is conducted in a similar manner to the souring already described. The chemick is used as weak as possible, the solution varying from $\frac{1}{8}°$ to $\frac{1}{4}°$ Tw. (sp. gr. 1·000625 to 1·00125) according to the weight and condition of the cloth under treatment. It is run through this liquor, gently squeezed, and piled up for four or six hours. It is then squeezed and washed. . . . . . .

White Sour.—After lying in the chemick the goods are again washed and squeezed, and afterwards soured in machine with sulphuric acid, used at a strength of about 4° Tw. (sp. gr. 1·020), and piled up for a period of at least

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three hours. Thereafter, in order thoroughly to expel all acid, the goods are twice washed, and finally squeezed, which concludes the operation of bleaching proper. The calico should now present a snow-white aspect, and should be fit to take the most delicate shades of colour when it is to be used for printing purposes. . . . .

[*On this subject should be also read the ten-page Article* CALICO-PRINTING *in Vol.* 4.]

200,000 TONS A YEAR PER FURNACE

From the Article (20½ pages) by H. M. HOWE, *Professor of Metallurgy, Columbia University.*

Iron and Steel.— . . . . . . In the last ten years of the 19th century alone the cost of labour in many important processes was reduced by about one-half, without reducing wages. Processes for obtaining wrought iron and steel "direct" from the ore lost their immediate, though not wholly their prospective, importance, and at the present time nearly all the ore which is mined is converted into pig-iron in the iron blast-furnace. Chiefly by daring, and by the use of more powerful blowing engines and hot-blast stoves, and of better arrangements for cooling and so protecting the lower part of the furnace, the production of the blast-furnace was increased, until the average production of a single Carnegie furnace in 1902, some 200,000 tons per annum, was greater than that of all the United States furnaces in 1830, and ten times that of 1820, and was one-fourth that of the whole world in 1800. By using the waste gases of the blast-furnace in gas engines their importance as sources of power has been greatly increased, so that establishments in which the rolling mills and other machinery adjoin the blast-furnaces, and therefore can be driven by such engines, will be given a new and often an irresistible advantage over their competitors. The use of great "mixers" to lessen the irregularities in the composition of the pig iron as it issues from the blast-furnace enables the Bessemer process to be applied directly to that iron, without allowing it to solidify and thus to dissipate its heat; and this same procedure is coming into use for the open-hearth and tentatively for the puddling process. The capacity of a single Bessemer converter has become as much as 20 tons, and that of the open-hearth furnace 100 tons, and owing to the car casting system and other improvements the production of a single pair of Bessemer converters reaches 50,000 tons per month—a rate forty-four times that of 1870, and more than thrice that of 1880. In some Bessemer works not only is the iron never allowed to cool between its entry into the blast-furnace in the state of ore and its delivery from the rolling mill in the form of rails or even of billets, but in this progress it undergoes no true heating by extraneous fuel, save in the blast-furnace itself, for the pig iron furnishes its own calorific power in the Bessemer converter, and the only other furnace treatment, that of "soaking," merely equalizes the heat of the ingot, and prevents its escape without adding to it. . . . .

[*The Tenth Edition also contains Articles under the headings* IRON (81 *pages*), IRON (THERAPEUTIC USES OF), METALLURGY, ORE-DRESSING, *&c., dealing with the subject.*]

BLASTING FUSES.

From the Article (40 pages) by C. LE NEVE FOSTER, *D.Sc., F.R.S., H.M. Inspector of Mines.*

Mining. . . . . . . In addition to these tools the miner requires an explosive, and a means of firing the charge at the bottom of the hole which will give him time to escape. Twenty years ago gunpowder was the only explosive in common use in mines, but at the present day its place has been taken to a very large extent by mixtures containing nitro-glycerin or gun-cotton. The powder used for blasting in mines usually contains less saltpetre than that which is employed for sporting or military purposes. The following is an analysis of mining powder by Captain Noble and Sir F. Abel:—

Explosives.

Saltpetre	61·66	Oxygen	2·23
Potassium sulphate	0·12	Ash	0·59
,, chloride	0·14	Water	1·61
Sulphur	15·06		
Carbon	17·93		100·00
Hydrogen	0·66		

Gunpowder compressed into cylinders of diameters suitable for bore-holes, and provided with a central hole for the insertion of the fuse, has lately been brought forward with some success. . . . .

Gun-cotton *per se* is not much in favour in ordinary mining; but mixed with some nitrate or mixture of nitrates, such as the nitrates of barium and potassium, and known as cotton powder, tonite, and potentite, it is employed extensively. Though not quite so powerful as dynamite, nitrated gun-cotton possesses the important advantage of not requiring to be thawed in cold weather. As in the case of dynamite, accidents have been caused by remnants of charges; and with both explosives it is necessary to examine carefully the bottoms of all holes after blasting, and to destroy any possible remnants by firing off a detonator in any bottom or "socket" which cannot with certainty be pronounced free from danger. . . . .

[*For interesting historical notes on the discovery, use, and working of metals, see the Articles* METALS *and* METALLURGY.]

THE COLOURS OF COTTONS.

From the Article (10 pages) by J. J. HUMMEL, *F.I.C., Prof. of Dyeing, Yorkshire College, Leeds.*

Dyeing. . . . . . . On the other hand, a given fibre, *e.g.*, cotton, behaves quite differently in dyeing towards various colouring matters. Some of these are not at all attracted by it, and are incapable of being used as dye-stuffs for cotton. For others cotton exhibits a marked attraction, so that it is readily dyed by mere steeping in a hot solution of the colouring matter. Again, for other colouring matters cotton has little or no attraction, and cannot be dyed with them until it has been previously impregnated or prepared with a metallic salt, tannic acid, or some other agent which is capable of combining with the colouring matter and precipitating it as an insoluble coloured compound within or upon the fibre.

. . . .

This arrangement of the colouring matters in natural chemical groups is well suited for the requirements of the chemist, but another classification is that based on the mode of their application in dyeing. This is much simpler than the previous one, and being better adapted for the practical purposes of the dyer, as well as for explaining the various methods of dyeing, it is preferred for this article. According to this arrangement colouring matters are classified under the following groups:—1. *Acid Colours.* 2. *Basic Colours.* 3. *Direct Colours.* 4. *Developed Colours.* 5. *Mordant Colours.* 6. *Miscellaneous Colours.* 7. *Mineral Colours.*

. . . .

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Mordant Colours.—The colouring matters of this class include some of the most important dyestuffs employed, since they furnish many colours remarkable for their fastness to light, washing, and other influences. Employed by themselves, Mordant Colours are usually of little or no value as dyestuffs, because, with some exceptions, either they are not attracted by the fibre, particularly in the case of cotton, or they only yield a more or less fugitive stain. Their importance and value as dyestuffs are due to the fact that they act like weak acids and have the property of combining with metallic oxides to form insoluble coloured compounds termed "lakes," which vary in colour according to the metallic oxide or salt employed. The most stable lakes are those in which the colouring matter is combined with two metallic oxides, a sesqui-oxide and a monoxide—*e.g.*, alumina and lime.

. . . .

THE NATURAL MORDANT COLOURS.—It is interesting to note that nearly all the natural or vegetable dyestuffs employed belong to the class of Mordant Colours, the most important of these being included in the following list:—*Madder, Cochineal Peachwood, Sapanwood, Limawood, Camwood, Barwood, Sanderswood, Old Fustic, Young Fustic, Quercitron Bark, Persian Berries, Weld, Logwood.*

. . . .

In the following list, the most important artificial Mordant Colours are arranged according to the colour they give in conjunction with the aluminium mordant, unless otherwise indicated. Those which dye the animal fibres, even without mordants, are given in italics; some are Direct Colours possessing mordant-dyeing properties, others are sulphonic acid derivatives of Alizarin Colours, suitable for wool but not for cotton.

Red.—Alizarin, Anthrapurpurin, Flavopurpurin, Purpurin, Alizarin Bordeaux, Alizarin Garnet R, Alizarin Maroon, Alizarin S, *Cloth Red, Diamine Fast Red, Anthracene Red.*

Orange and Yellow.—Alizarin Orange, Alizarin Orange G, Alizarin Yellow paste, Alizarin Yellow A, Alizarin Yellow C, Anthracene Yellow, Galloflavin, *Fustin, Alizarin Yellow GG, Alizarin Yellow R, Diamond Flavin G, Chrome Yellow D, Crumpsall Yellow, Fast Yellow, Diamond Yellow, Benzo Orange R, Cloth Orange, Carbazol Yellow, Chrysamine.*

Green.—Cœruleïn, Cœruleïn S, Alizarin Green S, Fast Green (Fe), Naphthol Green (Fe), Dioxin (Fe), Gambine (Fe), *Azo Green, Gallanil Green, Alizarin Green G and B, Acid Alizarin Green, Alizarin Cyanine Green, Diamond Green.*

Blue.—Alizarin Blue, Alizarin Blue S, Alizarin Cyanine, Anthracene Blue, Brilliant Alizarin Blue, Alizarin Indigo Blue S, *Acid Alizarin Blue, Brilliant Alizarin Cyanine, Alizarin Saphirole, Gallanilide Blue, Delphine Blue, Gallamine Blue, Celestine Blue, Chrome Blue, Gallazine A, Phenocyanine, Coreïne.*

Purple and Violet.—Galleïn, *Gallocyanine, Chrome Violet.*

Brown.—Anthracene Brown, Chromogen, *Cloth Brown, Diamond Brown, Alizarin Brown, Fast Brown.*

Black.—Alizarin Black, *Diamond Black, Alizarin Blue Black, Alizarin Cyanine Black, Alizarin Fast Grey, Chromotrope.*

. . . .

[*Turn to the illustrated Article on* TEXTILES, *Vol.* 23, *and read the interesting history there given of the art of weaving.*]

THE ART OF THE GLASS-BLOWER.

From the Articles (32 pages) *by* ALEX. NESBITT, JAMES PATON, C. HEATH WILSON, HARRY J. POWELL, *and* LEWIS F. DAY.

Glass.— . . . . . . In 1870 the colours available and used for English table-glass were ruby, canary-yellow, emerald-green, dark peacock-green, light peacock-blue, dark purple-blue, and a dark purple. About that year the "Jackson" table-glass was made in a light, dull green glass, similar to that used in stained glass as "white," containing a wealth of bubbles and interesting irregularities. Owing to these so-called defects the glass only appealed to a very select circle. The dull green, commonly known as "pale green," was followed successively by amber, white opal, blue opal, straw opal, sea-green, horn colour, and various pale tints of soda-lime glass, ranging from yellow to blue. Experiments have also been tried with a violet-coloured glass, a violet opal, a transparent black, and with glasses shading from red to blue, red to amber, and blue to green. Touches of colour have been added to vessels in course of manufacture by means of seals of molten glass, applied like sealing-wax; or by causing vessels to wrap themselves round with threads or coils of coloured glass. By the application of a pointed iron hook, while the glass is still ductile, the parallel coils can be distorted into bends, loops, or zigzags.

The surface of vessels may be rendered lustrous by rolling the hot glass on metallic leaf, or iridescent, by the deposition of metallic tin, or by the corrosion caused by the chemical action of acid fumes. Gilding and enamel decoration are applied to vessels when cold, and fixed by heat. Cutting and engraving are produced by pressing the surface of vessels against the edge of wheels revolving on horizontal spindles. "Cutting" wheels range from 18 inches to 3 inches in diameter, and are made of iron for grinding, stone for smoothing, and wood for polishing. "Engraving" wheels are small, ranging from 1 inch to ¼ inch, and are made of copper. It is the fashion to run down "cutting" as a form of decoration. As, however, "cutting" brings out one of the intrinsic beauties of potash-lead glass, namely, its remarkable power of reflecting and refracting light, the reason that it is decried must be on the ground of misapplication, rather than unfitness. The fault probably lies in cutting too deeply and too lavishly. When a vessel is smothered with cutting, form disappears in sparkle. The true use of engraving is to add interest to vessels by means of coats-of-arms, monograms, inscriptions, and graceful outlines. The improper, but too common, use of engraving is to hide defective material.

The influence exerted by public taste upon glass-blowing has not always been conducive to the best interests of the craft. Some instances are sufficiently curious to deserve notice. Large numbers of shades for gas, oil, and electric light, as well as bowls for flower-vases, were rendered decorative by allowing the edges of the mouths, while still ductile, to arrange themselves in natural folds. The discriminating public thought these natural folds to be too irregular, and certain manufacturers promptly introduced a machine, closely resembling a guillotine, which crimped the folds with mathematical precision. This curious distrust of natural irregularity has had the effect of, to a great extent, spoiling opal glass.

Sir Wm. Crookes writes on ASSAYING in Vol. 2.

[*In the Articles* ANNEALING, MIRROR, TELESCOPE, BOTTLE, WAVE THEORY, *and* MURANO (*the island in the Venetian Lagoon which was the birthplace of the Venetian glass-trade*), *will be found many interesting details of glass manufacture, ancient and modern.*]

THE HAND MULE.

From the Article (26 pages) *by* ISAAC WATTS, *Chairman of Cotton Supply Association, Manchester.*

Cotton.— . . . . . . The mule, in its structure and operation, is a compound of the spinning frame and of Hargreaves' jenny; from which circumstance it probably received its name. It contains a system of rollers like that belonging to the throstle; but the attenuated roving, as it issues from between the rollers, is twisted by the action of the spindles, which, in the mule, are mounted on a movable carriage that recedes from the rollers a little faster than the roving is delivered by them. The mode of putting the twist in by means of the spindles is exactly the same as in the jenny, and in fact resembles the most ancient method of using a spinning spindle. When a sufficient length of yarn or a "stretch" had been spun, the rollers and spindles were stopped, the yarn coiled round the bare spindles was

For the history of the art of EMBROIDERY see extract on p. 111 of this review.

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unwound, or "backed off," as it is technically called, the faller was put down by the spinner and the "nose" of the cop, and the spindles turned during the run in of the carriage with sufficient quickness to wind the spun yarn on the top of the yarn already wound on the spindles. When the spindle points have been brought by the running in of the carriage within a short distance of the delivery rollers, the rollers and spindles are again set in motion for another stretch. The manner of backing off and winding the spun yarn on the spindles is exactly the same as that used in Hargreaves' jenny. Crompton's great merit consisted in the adaptation of the best features of the throstle and the best principles of Hargreaves' jenny, so as to obtain from the combination of the two the principal elements of a perfect spinning machine. The motive power being manual, the work was rendered more fatiguing as the mules became longer, and thus the size of the machine was restricted by the strength of the spinner. In spinning the finer counts of yarn it became customary to continue the outward movement of the carriage, and the rotation of the spindles, a short time after the rollers were stopped; the movement of the carriage was then arrested, but the rotation of the spindles continued until the proper amount of twist had been put in the yarn. . . . . .

[*WOOL AND WOOLLEN MANUFACTURES is the title of a special Article in Vol. 24.*]

THE CRUSADE AGAINST ARTIFICIAL DYE

From the Article by LEWIS F. DAY, *Examiner for Art, Board of Education.*

Cotton Printing.— . . . . . . To a great extent machine printing has taken the place of hand work; the readier process of "steaming," as it is called, has been adopted in place of first printing in mordants and then dyeing; and the natural vegetable dyes have been superseded by artificial products of the laboratory. From the point of view of commerce this is all to the good. From the artistic standpoint it is not so. It led, indeed, to a condition of things which went far to justify the contention that all this "improvement" amounted in effect to the degradation of handicraft to the level of trade. When it was boasted by the manufacturer that a machine printed with more precision than a hand block, the artist pointed out that the result was mechanical; when it was claimed that the "steaming" process was cheap, it was answered that it was proportionately nasty; when it was urged that aniline gave brighter colours than vegetable dyes, it was complained that they were crude. And there was truth in these retorts: the precision of machine printing is not altogether an artistic gain; the rough and ready process
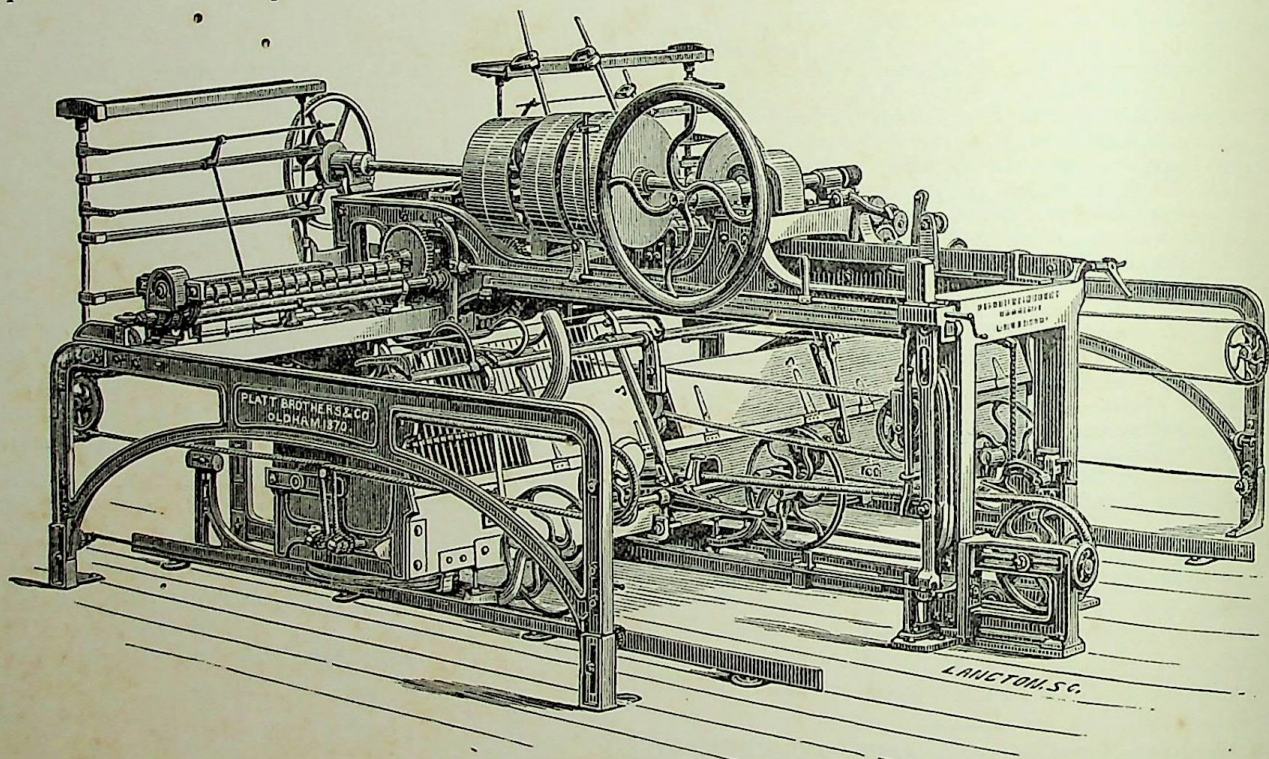
Fig. 13.—Hand Mule.

Technical Terms and the Index

The use of technical terms in writing upon special subjects is often an obstacle to the reader. For instance, many would wonder what is meant by "nidget" and "nidgeting"? Yet in a hop-growing county the term is familiar enough. The reference in the Index of the Tenth Edition elucidates the terms. Thus:—

As the season advances, the ground is hoed and again dug or stirred by a nidget or scarifier drawn by a horse.

The entry under the word "nidging" reveals another technical usage of a similar term in masonry. Thus:—

Granite is brought to a face by the scabbling hammer or granite axe, and the operation is called "nidging."

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of mixing dye and mordant into one printing paste, and allowing them, as it were, to fight it out between them in the steam-box, does not result in the purest of prints; and the possibility of getting out of coal-tar unmitigated shades of colour led to the shocking abuse of garish greens, purples, &c. Moreover, the method (at first adopted) of attaching the pigments to the cloth by means of albumen did not make them fast; and, in fading, they did not simply mellow or sadden like the fugitive tints of old tapestry, but grew sickly, and passed through various unwholesome shades of difference to decay. All this naturally aroused artistic animosity, and there was something like a crusade against artificial dyestuffs. William Morris, who was at the head of this movement, went further than mere protest against the new methods, and himself set to work at printing according to the old, and more or less obsolete, practice; and his cottons found ready acceptance at the hands of artists and others better qualified to admire the beauty and originality of his design than to form any just opinion as to the relative value of the method of dyeing it pleased him to adopt. . . . .

[The Article DYEING *(see extract on p. 94 of this pamphlet) puts the reader in possession of the latest knowledge as to chemical dyes. The Articles* COCHINEAL *and* INDIGO *should also be read in connexion with the subject of dyeing.]*

OIL FOUNTAINS.

From the Article (14 pages) by BOVERTON REDWOOD, Sir FORTESCUE FLANNERY, *M.P., and* VIVIAN B. LEWIS.

Petroleum.— . . . . . . The technology of the business has been marked by several important advances.

Recent advances

The system of drilling the wells in the United States, which closely resembles the ancient method practised by the Chinese, has been improved only in points of detail, and has remained practically unaltered for many years. In Russia a different system, in which the drilling instruments are attached to iron rods instead of to a manila cable, is usually employed. The wells in the latter country, though of less depth than the majority of those in the United States, are of far larger diameter and are much more costly to bore. The productiveness of a Russian oil "fountain" is, however, enormously in excess of the average production of wells in America, though the flow is not, as a rule, long sustained. In the Russian and Rumanian oil-fields electric motors have been substituted to a considerable extent for steam engines, and in a few instances oil engines have been successfully introduced. From those wells in the Russian oil-fields which do not flow, it is customary to raise the oil by means of a cylindrical baler, the presence of sand in the oil interfering with the use of the ordinary lift-pump adopted in the United States. Recently a system of raising the oil by means of a stream of compressed air has been successfully tested in the Baku district, and seems likely to be largely employed. In the refining of petroleum the principal features of improvement have been, in Russia, the general introduction of the continuous system of distillation, which effects considerable economy in time, fuel, and labour; and in the United States, the successful treatment of crude oil containing sulphur compounds, whereby these impurities are practically eliminated, and a class of crude oil, which could not previously be advantageously worked, is rendered commercially valuable. . . . .

*[*TEA, COFFEE, SUGAR, SALT, OPIUM, *and other industries each have lengthy notice in the Tenth Edition.]*

WHAT THE WORLD DRINKS.

From the Article (8 pages) by PHILIP SCHIDROWITZ, *Ph.D., F.C.S.*

Brewing.— . . . . . . In the decade 1880-90 both the number of barrels brewed and the quantity of materials annually used were considerably below the figures for 1875; the barrelage remaining almost stationary at 27 to 28 millions, as against 31 millions at the latter date. Since 1891, however, there has been a steady increase, and with the exception of 1895 each year has marked an advance on the preceding one. The following figures with regard to the barrelage, materials, duty, &c., need no explanation :—

United Kingdom.

Year.	Number of Barrels Produced.	Malt and Corn (Bushels).	Sugar and Equivalents (Cwts.).	Duty Paid (£).	Exports (Barrels).	Imports (Barrels).
1875	31,014,381	58,228,499	890,686	8,218,377	503,881	
1885	27,986,493	51,889,489	1,274,539	8,544,749	436,529	23,348
1891	31,927,303	55,698,523	2,025,658	9,781,398	569,702	
1899	36,498,204	58,681,112	4,031,290	12,085,822	485,032	49,188
1899 } 1900 }	37,090,986	57,354,904	4,181,889	12,345,150	522,830	50,666

Germany is now the greatest beer-producing nation, the United Kingdom coming next, but the consumption per head is considerably greater in the United Kingdom (Fig. 2). The latest comparable figures with regard to the total production and consumption of the three great beer-producing countries, together with those for 1885, are as under :—

Country.	Total Production (Gallons).		Consumption per Head of Population (Gallons).	
	1899.	1885.	1899.	1885.
United Kingdom	1,346,558,000	993,759,000	32·7	27·1
German Empire .	1,529,000,000	932,228,000	27·5	19·8
United States .	1,014,696,000	494,854,000	13·3	8·8

Large as the *per capita* (Fig. 3) consumption in the United Kingdom may seem, it is considerably less than is the case in Bavaria, which stands at the head of the list with 54·6 gallons, and in Belgium, which comes second with 46·9 gallons. In the city of Munich the consumption is actually over 100 gallons, that is to say, more than 2 pints a day for every man, woman, and child. It is curious to note that in Germany, which is usually regarded as the beer-drinking country *par excellence*, the consumption per head of this article is less than in England, and that inversely the average German consumes more alcohol in the shape of spirits than does the inhabitant of the British islands (*consumption of spirits per head:* Germany, 1·85 gallons; United Kingdom, 1·03 gallons). In the British colonies beer is generally, as in the United Kingdom, the staple drink, but whereas in the United Kingdom 31 gallons are consumed annually per head of population, in Australasia.
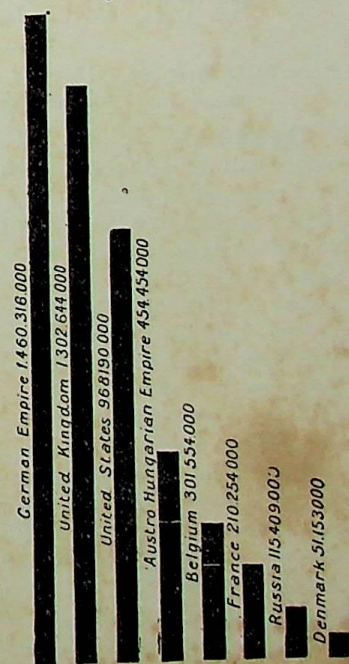
Fig. 2.—Diagram showing graphically the total production of Beer (gallons) in the United Kingdom and chief countries.

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the *per capita* consumption amounts to only 10·6, in Canada to 3·6, and in Cape Colony to 1·6 gallons. In the latter colony, however, the staple drink appears to be spirits, which are consumed to the extent of 1·1 gallon per head of population. . . . .

[*See p. 88 of this pamphlet, under* AGRICULTURE, *where is given an extract from the Article* HOPS AND HOP-GROWING.]

SOBER BY ACT OF PARLIAMENT.

From the Article (2 pages) by JOHN KOREN, *Author of "Economic Aspects of the Liquor Problem":*

Liquor Laws.—No period in history has been so fruitful in progressive liquor legislation as the decades since about 1880. The laws enacted, as well as the proposed legislation agitated before nearly every civilized government, reflect both a growing public consciousness of the evils of the drink traffic and determined efforts to overcome them. The modern tendency is to combat these evils by restrictive measures rather than by attempting a general suppression of the sale of intoxicants, and to give the local community the right to choose between licence and the prohibition of the traffic, instead of applying prohibitory laws to entire states or countries.

. . . .

New Zealand and Queensland are the two Australasian colonies granting full powers of local option, but little advantage has been taken of the privilege. Limited option prevails in the other colonies, with the exception of Tasmania. There are, of course, numerous examples in other parts of the world of the more or less successful adoption of local prohibition, but not as the result of expressed popular will. . . . .

[*For further information as to the legislative crusade against the Drink Traffic, see the very interesting Article* SOCIAL PROGRESS *in the Tenth Edition.*]

THE CULTURE OF THE NATIVE.

From the Article ($4\frac{1}{2}$ pages) by Dr H. M. SMITH, *U.S. Commissioner of Fish and Fisheries, Washington.*

Oyster.— . . . . . . The most elaborate system of oyster culture is that practised at Arcachon and elsewhere in France, and, to a limited extent since 1865, on the island of Hayling, near Portsmouth, in England. The young oysters, having been collected in the breeding season upon tiles or hurdles, are laid down in artificial ponds, or in troughs, where the water is supplied to them at the discretion of their proprietors. The oysters are thus kept under control like garden plants from the time they are laid down to that of delivery to commercial control. The numerous modifications of this system are discussed in various recent reports.

The simplest form of oyster culture is the preservation of the natural oyster-beds. Upon this, in fact, depends the whole future of the industry, since it is not probable that any system of artificial breeding can be devised which will render it possible to keep up a supply without at least occasional recourse to seed oysters produced under natural conditions. It is the opinion of almost all who have studied the subject that any natural bed may in time be destroyed by overfishing (perhaps not by removing all the oysters, but by breaking up the colonies, and delivering over the territory which they once occupied to other kinds of animals), by burying the breeding oysters, by covering up the projections suitable for the reception of spat, and by breaking down, through the action of heavy dredges, the ridges which are especially fitted to be seats of the colonies. The immense oyster-beds in Pocomoke Sound, Maryland, have practically been destroyed by over-dredging, and many of the other beds of the United States are seriously damaged. The same is doubtless true of all the beds of Europe. It has also been demonstrated that under proper restriction great quantities of mature oysters, and seed oysters as well, may be taken from any region of natural oyster-beds without injurious effects. Parallel cases in agriculture and forestry will occur to every one. Möbius, in his most admirable essay *Die Auster und Die Austernwirthschaft*, has pointed out the proper means of preserving natural beds, declaring that, if the average profit from a bed of oysters is to remain permanently the same, a sufficient number of mother oysters must be left in it, so as not to diminish the capacity of maturing. . . .

. . . .

[*Among the multitude of similar articles, the following may be mentioned*—MACKEREL, HERRING, COD, SARDINE, *while* ANGLING *will interest sportsmen.*]

THE FOUNDRY OF DEATH.

From the Article ($10\frac{1}{2}$ pages) by A. G. HADCOCK, *Manager of Gun Department, Elswick Works.*

Gun-Making.— . . . . . . The steel is run from the furnace into a large ladle, previously heated by gas, and from this it is poured into a cast-iron ingot mould of from 10 to 12 feet high and 2 feet or more in diameter. The external shape of these ingots varies in different steel works, but they are so arranged that, as the ingot slowly cools, the shrinkage of the metal shall not set up dangerous internal stresses. The top of the ingot is generally porous, and consequently, after cooling, it is usual for about one-third of the length of the ingot to be cut from the top and remelted; a small part of the bottom is also often discarded. The centre of the larger ingots is also inclined to be somewhat unsound, and a hole is therefore bored through them to remove this part. In the Whitworth method of fluid-compressed steel this porosity at the top and centre of the ingot does not occur to the same extent, and a much greater portion can therefore be utilized. The sound portion of the ingot is heated in a reheating gas furnace, which is usually built in close proximity to a hydraulic forging press. This press is now almost exclusively used for forging the steel in place of the steam hammers which were formerly an important feature in all large works (Fig. 1, Plate). The largest of these steam hammers could not deliver a blow of more than some 500 foot tons of energy; with the hydraulic press, however, the pressure amounts to, for ordinary purposes, from 1000 to 5000 tons, while for the manufacture of armour plates it may amount to as much as 10,000 or 12,000 tons. For 8-inch guns and those of larger calibre the bored-out ingot is forged hollow on a tubular mandrill, kept cool by water running through the centre; from two to four hours' forging work can be performed before the metal has cooled down too much. Generally, after one end of the ingot has been forged down to the proper size, it is then reheated and the other end similarly treated. The forging of the steel and the subsequent operations have a very marked influence on the structure of the metal, as will be seen from the micro-photographs of Fig. 2 (Plate); (*a*) and (*b*) show the structure of the cast steel of the actual ingot. . . . .

Forging the barrel.

. . . .

[*See also* ORDNANCE, SMALL ARMS, AMMUNITION, MACHINE GUNS.]

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The Articles GUN-MAKING and GUNNERY, extending over 60 pages, give the whole history of Artillery from the earliest to the present time.

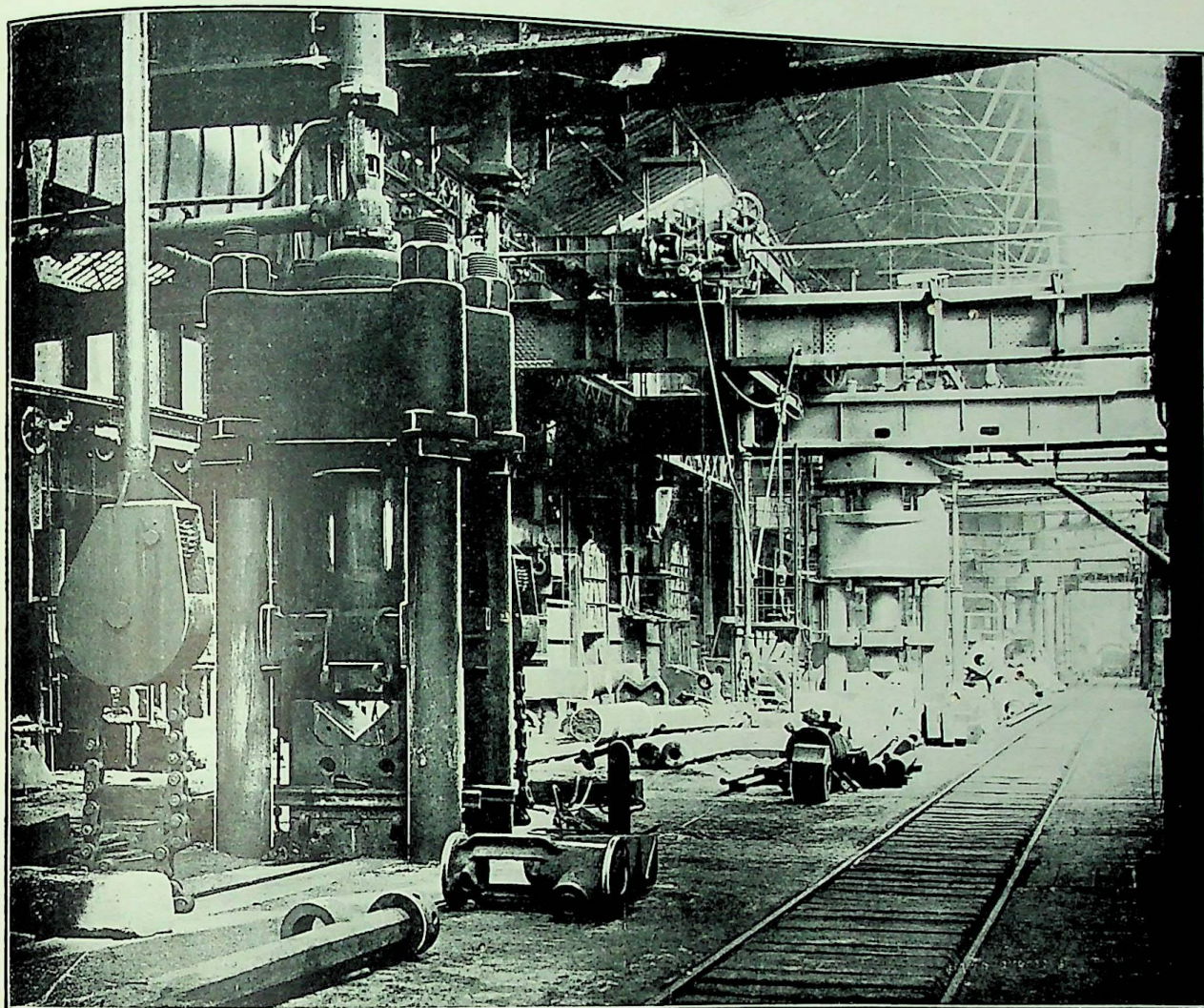
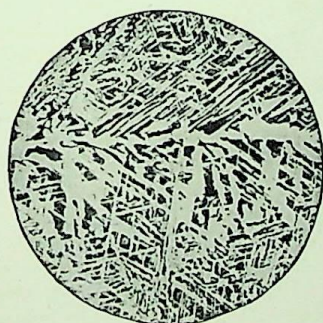
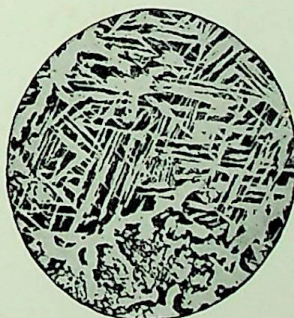
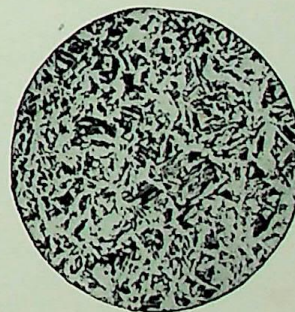
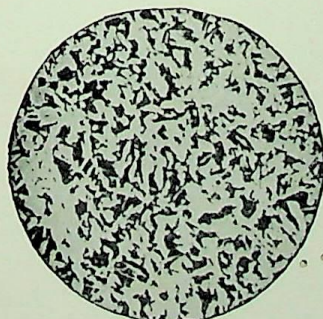



Fig. 1.—Interior of a Modern Gun-making Establishment.

a, Top, as cast. ×29.

b, Bottom, as cast. ×29.

c, Top, forged. ×29.

d, Bottom, forged. ×29

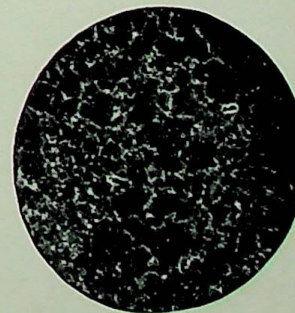
e, Bottom, forged. ×1000.

f, Oil-hardened and annealed. ×29.

Fig. 2.—Effects of Forging on Structure of Metal.

The lives of Lord ARMSTRONG, KRUPP, and other great Gun-inventors are written in the Tenth Edition.

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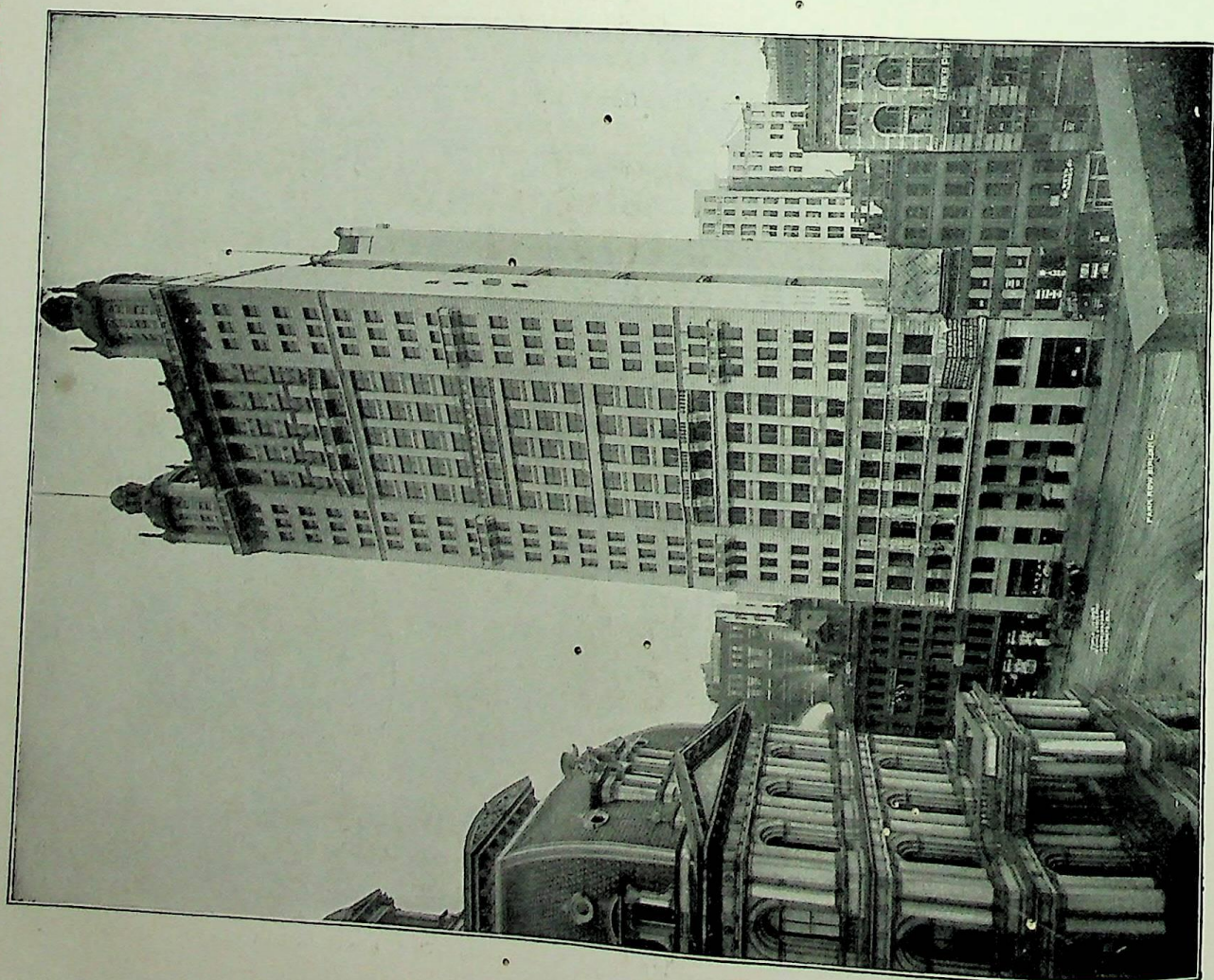
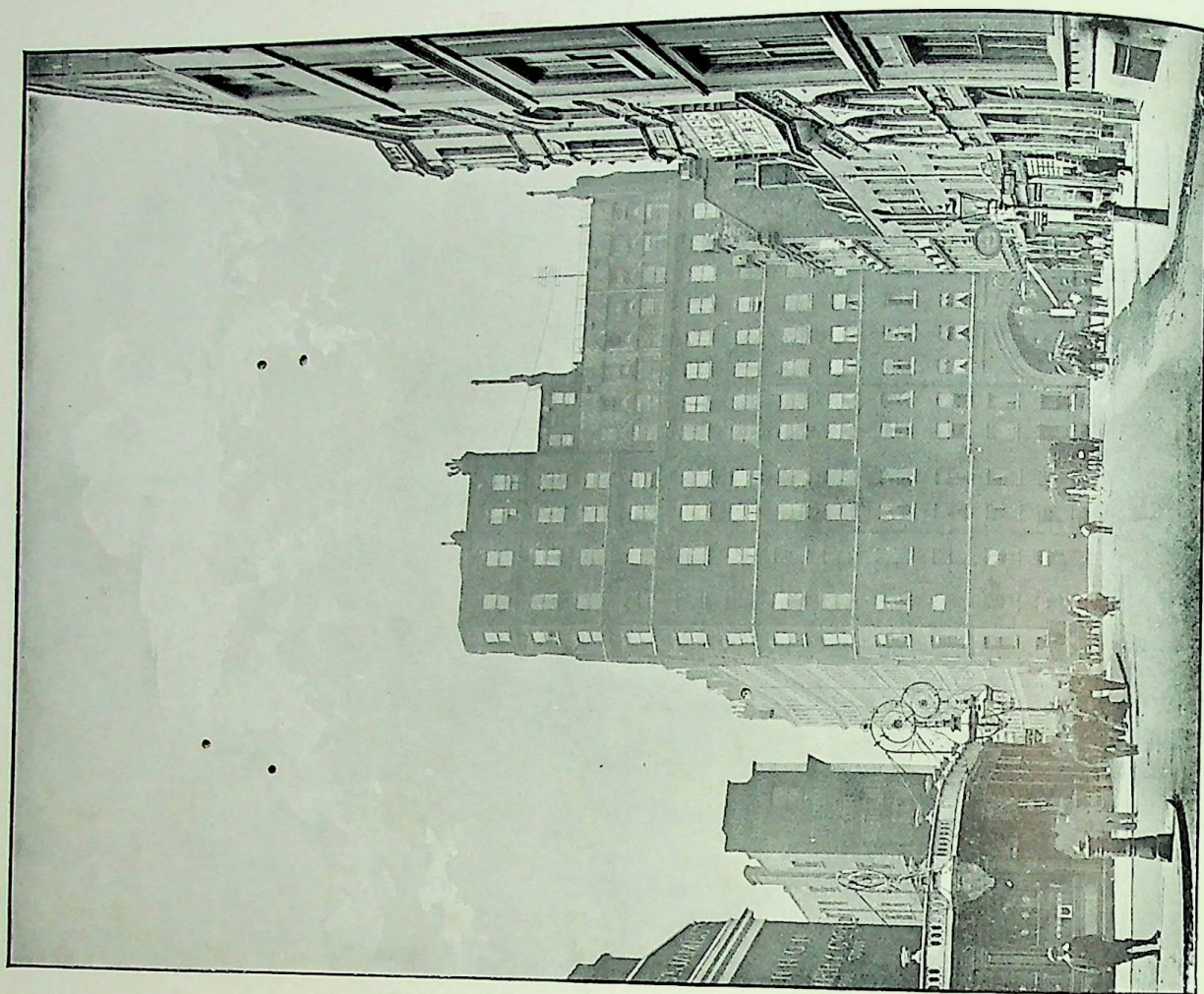
The extraordinary height of modern buildings, especially in America, has necessitated equally extraordinary developments in lifts, fire-escapes, and fire appliances generally. For full particulars as to the most recent improvements see the Article **FIRE AND FIRE EXTINCTION.**

PARK ROW BUILDING, NEW YORK.
(From a Photograph by Irving Underhill, New York.)

QUEEN ANNE MANSIONS, LONDON.

HIGH BUILDINGS IN ENGLAND AND AMERICA

For an account of the new movement in Architecture in the United States, see brief extract quoted on page 113 of this Review.

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THE TRAMWAY QUESTION.

From the Article (33 pages) *by* Prof. J. A. FLEMING, LOUIS DUNCAN, *and* EMILE GARCKE, *F.S.S., Ph.D.*

Electricity Supply.— . . . . . . Since 1890 the tramway industry in Great Britain has been passing through a transition stage. On the one hand, in view of the right of local authorities to purchase the undertakings after 21 years, very few of the tramway companies have felt any inducement to develop their undertakings; and on the other, the gradual adoption of electricity as the motive-power has led to the reconstruction of the lines by local authorities. Some of the companies are enabled to substitute electricity by reason of arrangements with the local authorities to postpone the date for the exercise of their rights to purchase. . . . With electric traction, if the traffic calls for a more frequent service, it can be provided without very largely increasing the working expenses. Additional capital expenditure has to be incurred to furnish more cars and other plant, but a much smaller increase of traffic will justify an addition to the number running. The greater facility with which electric cars are started, and the greater speed which can be attained, enable them to perform a much larger number of journeys. In America they frequently run between 100 and 200 miles per day.

[*The industrial development of Electrical Engineering, in Telegraphy, in House and Street Lighting, in Traction, and in Factories is described at length in this Article.*]

A MACHINE THAT SEWS BOOKS.

From the Article (3 pages) *by* CYRIL J. H. DAVENPORT, *Librarian of British Museum.*

Bookbinding.— . . . . . . Patent book-sewing machines appear to be largely of German manufacture (Fig. 3). They are of two kinds: one sews the books on bands, either flat or round, and the other supplies the place of bands by a kind of chain stitch. The band-working machines bring the return thread back by pulling it through the upper and lower edges of the back of each section, thereby to some extent weakening each section, but at the same time this weakening can be to some extent neutralized by careful headbanding. The other system, where the band is replaced by a chain stitch, brings back the return thread inside each section; the objection to this is that there is a flattening out of the back of the book, which becomes a difficulty when the subsequent operation of covering the book begins. . . . The threads catch into hooked needles and are drawn through holes made by piercers set to a certain distance; a shuttle like that used in an ordinary sewing machine sews the inner thread backwards and forwards. Each section is placed upon a sort of metal saddle by the hand of the operator. . . . .

[*Great printers,* e.g., JOHN GUTENBERG, JOHANN FUST, CAXTON, ALDUS MANUTIUS, ELZEVIR, JODOCUS BADIUS, *each have an article in the Tenth Edition. See also* ENGRAVING, LITHOGRAPHY, BOOK PRINTING.]
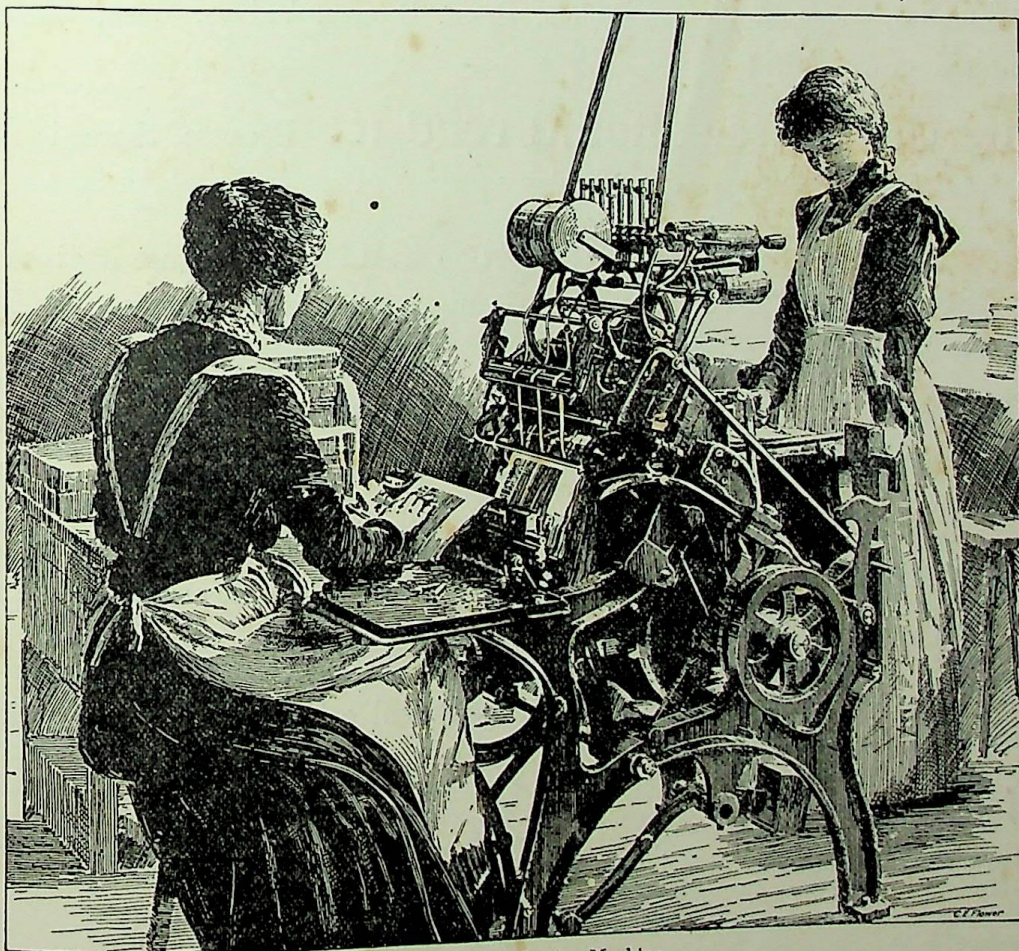
Fig. 3.—Book-Sewing Machine.

The word Industry has only to be thought of in all its possible applications to convince us that it touches almost every form of human activity. One form of Industry is that which seeks to increase the commodities of life for the future. The Tenth Edition of the *Encyclopædia Britannica* is in itself a monument of Industry which will repay every reader for the time spent in mastering the knowledge it contains.

HIGH BUILDINGS IN ENGLAND AND AMERICA
For an account of the new movement in Architecture in the United States, see brief extract quoted on page 113 of this Review.

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THE preceding pages must have an interest for every one of intelligence. For us all INDUSTRY, the tireless GIANT, does daily work. But it is not only to those who stand outside the world of factories and foundries that the *Encyclopædia Britannica* is useful. It is also for those who daily toil at the forge and the anvil, and it gives them **KNOWLEDGE** which is **POWER.** Here are some reasons **WHY** the world's workers should read the Tenth Edition.

Why the Miner should read it: Because it tells him about all kinds of Mining—Coal, Gold, Silver, Iron, Copper, Lead, Zinc, Tin, Mercury, Aluminium; the history of Mining, the working, drainage, and ventilation of Mines, and the sinking of Mines in all lands.

Why the Cotton Operative should read it: Because it gives a complete history of Cotton and Cotton-manufactures in England, America, India, Egypt, Brazil, Russia, everywhere: Because it deals with the bleaching of Cotton, the dyeing of Cotton, Calico and Calico-printing, Ginghams, Gauzes, Laces, Cotton Yarns, &c.

Why the Metal-worker should read it: Because it tells him all about Metallurgy, Forge, Foundry, Bellows, Blast-Furnace, Iron and Steel Work, Nail-making, Arms, Assaying, Boilers, Brass, Bronze, Valves, Wire, Electro-plating, Gun-making, &c., &c.

Why the Carpenter should read it: Because there is no kind of Wood, no detail in Carpentry, no Tools or process of his trade which is not described.

Why the Stone-mason should read it: Because it gives him all the knowledge he can wish as to Marbles, Granites, Sandstones, Cements, and the way to work them.

Why the Paper-worker should read it: Because there is no secret of the Paper Trade, no part of his daily toil, which is not treated fully in its pages.

Why the Jeweller should read it: Because the working of the Precious Metals, Goldsmithery, the cutting of Diamonds and all Gems, are described for him.

Why the Potter should read it: Because he will there learn the history of his Craft, the lives of Palissy, Wedgwood, and other great potters, the secrets of Japanese, Indian, Limoges, Sèvres, Chinese, and other Wares.

Why the Glass-worker should read it: Because the whole history of Glass and its manufacture is related at length in its pages.

And there are reasons just as convincing Why the Printer, the Leather-worker, the Cutler, the Button-maker and each and every Skilled Mechanic should read it.

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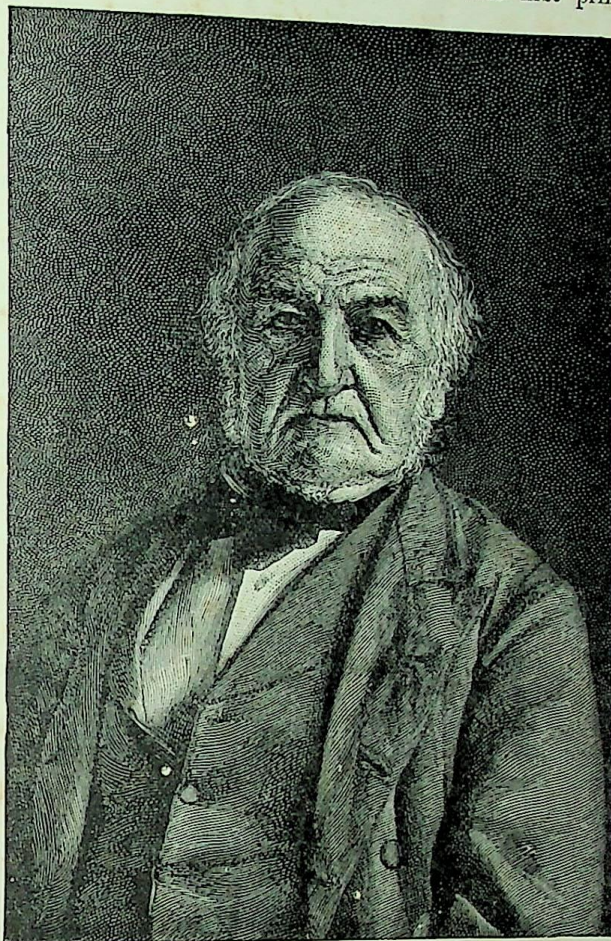
At Oxford Gladstone read steadily, but not laboriously, till he neared his final Schools. During the latter part of his undergraduate career he took a brief but brilliant share in the proceedings of the Union, of which he was successively Secretary and President. He made his first speech on 11th February 1830. Brought up in the nurture and admonition of Canning, he defended Roman Catholic emancipation, and thought the Duke of Wellington's Government unworthy of national confidence. He opposed the removal of Jewish disabilities, arguing, we are told by a contemporary, "on the part of the Evangelicals," and pleaded for the gradual extinction, in preference to the immediate abolition, of slavery. But his great achievement was a speech against the Whig Reform Bill. One who heard this famous discourse says: "Most of the speakers rose, more or less, above their usual level, but when Mr Gladstone sat down we all of us felt that an epoch in our lives had occurred. It certainly was the finest speech of his that I ever heard." Bishop Charles Wordsworth said that his experience of Gladstone at this time "made me (and I doubt not others also) feel no less sure than of my own existence that Gladstone, our then Christ Church undergraduate, would one day rise to be Prime Minister of England." In December 1831 Gladstone crowned his career by taking a double first-class. Lord Halifax (1800–1885) used to say, with reference to the increase in the amount of reading requisite for the highest honours: "My double-first must have been a better thing than Peel's; Gladstone's must have been better than mine."

William Ewart Gladstone (1895).
(From a photograph by Elliott and Fry, London.)

Now came the choice of a profession. Deeply anxious to make the best use of his life, Gladstone turned his thoughts to Holy Orders. But his father had determined to make him a politician. Quitting Oxford in the spring of 1832, Gladstone spent six months in Italy, learning the language and studying art. In the following September he was suddenly recalled to England, to undertake his first parliamentary campaign. The fifth Duke of Newcastle was one of the chief potentates of the High Tory party. His frank claim to "do what he liked with his own" in the representation of Newark has given him a place in political history. But that claim had been rudely disputed by the return of a Radical lawyer at the election of 1831. The Duke was anxious to obtain a capable candidate to aid him in regaining his ascendancy over the rebellious borough. His son, Lord Lincoln, had heard Gladstone's speech against the Reform Bill delivered in the Oxford Union, and had written home that "a man had uprisen in Israel." At his suggestion the Duke invited Gladstone to stand for Newark in the Tory interest against Mr Serjeant Wilde, afterwards Lord Chancellor Truro. The last of the Unreformed Parliaments was dissolved on the 3rd December 1832. Gladstone, addressing the electors of Newark, said that he was bound by the opinions of no man and no party, but felt it a duty to watch and resist that growing desire for change which threatened to produce "along with partial good a melancholy preponderance of mischief." The first principle to which he looked for national salvation was, that the "duties of governors are strictly and peculiarly religious, and that legislatures, like individuals, are bound to carry throughout their acts the spirit of the high truths they have acknowledged." The condition of the poor demanded special attention; labour should receive adequate remuneration; and he thought favourably of the "allotment of cottage grounds." He regarded slavery as sanctioned by Holy Scripture, but the slaves ought to be educated, and gradually emancipated. The contest resulted in his return at the head of the poll.

Entry into Parliament.

The first Reformed Parliament met on 29th January 1833, and the young member for Newark took his seat for the first time in an assembly which he was destined to adorn, delight, and astonish for more than half a century. His maiden speech was delivered on the 3rd June, in reply to what was almost a personal challenge. The Colonial Secretary, Mr Stanley, afterwards Lord Derby, brought forward a series of resolutions in favour of the extinction of slavery in the British colonies. On the first night of the debate Lord Howick, afterwards Lord Grey, who had been Under-Secretary for the Colonies, and who opposed the resolutions as proceeding too gradually towards abolition, cited certain occurrences on Sir John Gladstone's plantation in Demerara to illustrate his contention that the system of slave-labour in the West Indies was attended by great mortality among the slaves. Gladstone in his reply—his first speech in the House—avowed that he had a pecuniary interest in the question, "and, if he might say so much without exciting suspicion, a still deeper interest in it as a question of justice, of humanity, and of religion." If there had recently been a high mortality on his father's plantation, it was due to the age of the slaves rather than to any peculiar hardship in their lot. It was true that the particular system of cultivation practised in Demerara was more trying than some others; but then it might be said that no two trades were equally conducive to health. Steel-grinding was notoriously unhealthy, and manufacturing processes generally were less favourable to life than agricultural. While strongly condemning cruelty, he declared himself an advocate of emancipation, but held that it should be

The question of slavery.

This is a facsimile page from the Article GLADSTONE, by G. W. E. Russell, LL.D., in the Tenth Edition of the Encyclopaedia Britannica.

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ART

Nature contains the elements, in colour and form, of all pictures, as the keyboard contains the notes of all music. But the artist is born to pick and choose, and group with science, these elements, that the result may be beautiful—as the musician gathers his notes and forms his chords, until he bring forth from chaos glorious harmony.—WHISTLER.

HE subject of Art needs no introduction, for there has never been an age in which the love of pictorial presentation has been so widely popular as at the present. The immense increase in methods of reproduction which is still a lively phenomenon of the times is partly the cause of a popular condition unforeseen by the Old Masters.

The following extracts have been mainly selected from the portions of the Encyclopædia Britannica devoted to British Art. No country can show a development forming so continuous a story of contemporary life reflected in the masterpieces of brush and pen as England. Her gallery of portrait-painters is in itself a brilliant historical lesson; her landscapes are eloquent of all that is best in a national love for country life. Her list of subject-painters sinks into insignificance beside those of Holland and Italy; but this deficiency—if indeed it is a deficiency—is compensated, or at all events explained, by the vigour of that national spirit of caricature, which, in fiction as well as in painting—in the novels of Fielding, Thackeray, and Meredith, as well as in the pictures of Hogarth, Rowlandson, and Orchardson—has found lasting expression. It is not, however, to one exclusively national aspect of Art that the Encyclopædia Britannica has confined its attention. The appreciations of continental schools and painters with which the volumes are adorned will satisfy the most scrupulous demands for international justice in a matter of such international significance as taste in Art.

Appreciation of a picture is to-day shown by the infinite variety of comment which it arouses, from the crudest curiosity as to what story it tells, to the most delicate and subtle enjoyment of the way in which one texture of paint is superimposed upon another, and one spot of cunningly placed colour may compel a variety of neighbouring tints into harmonious relations.

Whether from the point of view of amateur, critic, or painter, the Encyclopædia Britannica will afford constant pleasure to the reader. Nor should it be forgotten that the Tenth Edition contains information equally copious on the subjects of Architecture, Sculpture, Arts and Crafts, and indeed every form of ingenuity which has beauty for its principal aim.

THE LANDSCAPE PAINTERS OF ENGLAND.

A MASTER IN "TONE."

From the Article on

Constable.— . . . . . . The principles on which this great painter worked are not far to seek. He himself has said, "Ideal art in landscape is all nonsense;" and this sentence may be said to sum up the whole of his theory and practice of painting. Turner's pictures to him were merely "golden dreams;" Both and Berghem were only fit for burning; if he proclaimed the greatness of Claude and Titian, it was that he recognized their truth. Truth in its broadest and finest sense was his only aim. He studied the country untiringly and intently, sacrificing mere detail to the larger necessities of tone ("tone is the most seductive and inviting quality a picture can possess"), reproducing to an eminent degree the sentiment of what he saw, flooding his canvas with light and shadows as one finds them, and faithfully translating such glimpses as were revealed to him of the geniality of nature. . . . . . . His merits were recognized in France; but his studio was full of unsold pictures at his death, and it is certain that he could not have earned a livelihood by his art without abandoning his theories. Since his death, however, his pictures have greatly increased in value; and his influence on contemporary French and English landscape is recognized as both great and good. . . . .

THE PAINTER OF "GOLDEN DREAMS."

From Sir GEORGE REID'S Article on

Turner.— . . . . . . By the time Turner had completed his thirteenth year his school days were over and his choice of an artist's career settled. In 1788-89 he was receiving lessons from Palice, "a floral drawing master," from T. Malton, a perspective draughtsman, and from Hardwick, an architect. He also attended Paul Sandby's drawing school in St Martin's Lane. Part of his time was employed in making drawings at home, which he exhibited for sale in his father's shop window, two or three shillings being the usual price. He coloured prints for engravers, washed in backgrounds for architects, went out sketching with Girtin, and made drawings in the evenings for Dr Munro "for half a crown and his supper." When pitied in after life for the miscellaneous character of his early work, his reply was "Well! and what could be better practice?" In 1789 Turner became a student of the Royal Academy. He also worked for a short time in the house of Sir Joshua Reynolds, with the idea, apparently, of becoming a portrait painter; but the death of Reynolds occurring shortly afterwards, this intention was abandoned.

. . . .

But perhaps one of the greatest services Turner rendered to the art of England was the education of a whole school of engravers. . . . . . . No better proof can be found of the immense advance made than by comparing the work of the landscape engravers of the pre-Turnerian period with the work of Miller, Goodall, Willmore, Cooke, Wallis, Lupton, C. Turner, Brandard, Cousen, and others who worked under his guidance. The art of steel engraving reached its highest development in England at this time. Rogers's *Italy* (1830) and his *Poems* (1834) contain perhaps the most beautiful and delicate of the many engravings executed after Turner's drawings. . . . .

[*For a survey of the Grosvenor Gallery, the Wane of Pre-Raphaelitism, the Newlyn School, the Impressionist School, the New English Art Club, Modern English Landscape Painters, the Glasgow and Edinburgh Schools, &c., &c., the article* SCHOOLS OF PAINTING *should be read. The Tenth Edition also contains Articles on* WILSON, DAVID COX, MORLAND, *and many other representatives of British Art in Landscape.*]

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THE MASTERS OF PORTRAIT PAINTING IN ENGLAND.

THE FIRST PRESIDENT OF THE ROYAL ACADEMY.

From the Article by JOHN M. GRAY *on*

Reynolds.— . . . . . . The artist's painting-room was thronged with the wealth and fashion of London, "with women who wished to be transmitted as angels, and with men who wished to appear as heroes and philosophers"; and he was already afloat upon that tide of prosperity which never ebbed till the day of his death. Various other artists contested with him for popular applause. First the Swiss Liotard had his moment of popularity; and at a later period there was Opie, and the more formidable and sustained rivalry of Gainsborough and of Romney; but in the midst of all, then as now, Reynolds maintained an admitted supremacy. . . . During the first year of his residence in London he had made the acquaintance of Dr Johnson, which, diverse as the two men were, became a friendship for life. To him Burke and Goldsmith, Garrick, Sterne, Bishop Percy, and, it seems, Hogarth, were before long added. At the hospitable dinner-table of Reynolds such distinguished men enjoyed the freest and most unconstrained companionship, and most of them were members of the "Literary Club," established, at the painter's suggestion, in 1764. . . . . .

THE CRAPE-MAKER'S SON.

From the Article on

Gainsborough.— . . . . . . Bath was then the general resort of wealth and fashion, and to that city, towards the close of the year 1759, he removed with his wife and two daughters, the only issue of their marriage. His studio in the circus was soon thronged with visitors; he gradually raised his price for a half-length portrait from 5 to 40 guineas, and for a whole-length from 8 to 100 guineas. Among his sitters at this period were the authors Sterne and Richardson, and the actors Quin, Henderson, and Garrick. Meanwhile he contributed both portraits and landscapes to the annual exhibitions in London. He indulged his taste for music by learning to play the viol-di-gamba, the harp, the hautboy, the violoncello. His house harboured Italian, German, French, and English musicians. He haunted the green-room of Palmer's theatre, and painted gratuitously the portraits of many of the actors. . . . . . In February 1788, while witnessing the trial of Warren Hastings, he felt an extraordinary chill at the back of his neck; this was the beginning of a cancer (or, as some say, a malignant wen) which proved fatal on 2nd August of the same year. . . . . . .

"THE MAN IN CAVENDISH SQUARE."

From the Article on

Romney.— . . . . . . In 1775 Romney returned to London, establishing himself in Cavendish Square, and resuming his extensive and lucrative employment as a portrait-painter, which in 1785, according to the estimate of his pupil Robinson, yielded him an income of over £3600. The admiration of the town was divided between him and Reynolds. "There are two factions in art," said Lord Thurlow, "and I am of the Romney faction,"—and the remark, and the rivalry which it implied, caused much annoyance to Sir Joshua, who was accustomed to refer contemptuously to the younger painter as "the man in Cavendish Square." After his return from Italy Romney formed two friendships which powerfully influenced his life. . . . . . About 1783 Romney was introduced to Emma Hart, afterwards celebrated as Lady Hamilton, and she became the model from whom he worked incessantly. Her bewitching face smiles from innumerable canvases; he painted her as a Magdalene and as a Joan of Arc, as a Circe, a Bacchante, a Cassandra, and he has himself confessed that she was the inspirer of what was most beautiful in his art. . . . .

[*See also the Articles* HOLL, LEIGHTON, LELY, LAWRENCE, MILLAIS, WATTS.]

ENGLISH PAINTERS OF MANNERS.

COLOURIST AND SATIRIST.

From Mr. AUSTIN DOBSON'S *article on*

Hogarth.— . . . . . . He is now held to have been an excellent painter, pure and harmonious in his colouring, wonderfully dexterous and direct in his handling, and in his composition leaving little or nothing to be desired. As an engraver his work is more conspicuous for its vigour, spirit, and intelligibility than for finish and beauty of line. He desired that it should tell its own tale plainly, and bear the distinct impress of his individuality, and in this he thoroughly succeeded. As a draughtsman his skill has sometimes been debated, and his work at times undoubtedly bears marks of haste, and even carelessness. If, however, he is judged by his best instead of his worst, his work will not be found to be wanting in this respect. But it is not after all as a draughtsman, an engraver, or a painter that he claims his pre-eminence among English artists—it is as a wit, a humorist, a satirist upon canvas. Regarded in this light he has never been equalled, whether for his vigour of realism and dramatic power, his fancy and invention in the decoration of his story, or his merciless anatomy and exposure of folly and wickedness If we regard him—as he loved to regard himself—as "author" rather than "artist," his place is with the great masters of literature. . . . .

A GENUINE VICTORIAN.

From the Article on

Frith.— . . . . . . His "Derby Day" is now in the National Gallery of British Art. In his youth, in common with the men by whom he was surrounded, he had leanings towards romance, and he scored many successes as a painter of imaginative subjects. In these he proved himself to be possessed of exceptional qualities as a colourist and manipulator, qualities that promised to earn for him a secure place among the best executants of the British School. But in his middle period he chose a fresh direction. Fascinated by the welcome which the public gave to his first attempts to illustrate the life of his own times, he undertook a considerable series of large canvases, in which he commented on the manners and morals of society as he found it. He became a pictorial preacher, a painter who moralized about the everyday incidents of modern existence; and he sacrificed some of his technical variety. There remained, however, in all his later work a remarkable sense of characterization, and an appreciation of dramatic effect more than ordinarily acute. . . .

[*The Tenth Edition contains Articles on* STOTHARD, WILKIE, ROWLANDSON, CRUIKSHANK, CARICATURE, *&c., &c.*]

PRE-RAPHAELITE AND POST-RAPHAELITE.

ROMANCE ON CANVAS.

From Mr. LAURENCE BINYON'S *Article on*

Burne-Jones.— . . . . . . Burne-Jones's aim in art is best given in some of his own words, written to a friend: "I mean by a picture a beautiful romantic dream of something that never was, never will be—in a light better than any light that ever shone—in a land no one can define or remember, only desire—and the forms divinely beautiful—and then I wake up, with the waking of Brynhild." No artist was ever more true to his aim. Ideals resolutely pursued are apt to provoke the resentment of the world, and Burne-Jones encountered, endured, and conquered an extraordinary amount of angry criticism. In so far as this was directed against the lack of realism in his pictures, it was beside the point. The earth, the sky, the rocks, the trees, the men and women of Burne-Jones are not those of this world; but they are themselves a world, consistent with itself, and having therefore its own

For the titles of some of the articles on **Music** see p. 132.

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reality. . . . . . Burne-Jones's men and women are dreamers too. It was this which, more than anything else, estranged him from the age into which he was born. But he had an inbred "revolt from fact" which would have estranged him from the actualities of any age. That criticism seems to be more justified which has found in him a lack of such victorious energy and mastery over his materials as would have enabled him to carry out his conceptions in their original intensity. Representing the same kind of tendency as distinguished his French contemporary, Puvis de Chavannes, he was far less in the main current of art, and his position suffers accordingly. Often compared with Botticelli, he had nothing of the fire and vehemence of the Florentine. Yet, if aloof from strenuous action, Burne-Jones was singularly strenuous in production. His industry was inexhaustible, and needed to be, if it was to keep pace with the constant pressure of his ideas. Invention, a very rare excellence, was his pre-eminent gift. Whatever faults his paintings may have, they have always the fundamental virtue of design; they are always pictures. His fame might rest on his purely decorative work. But his designs were informed with a mind of romantic temper, apt in the discovery of beautiful subjects, and impassioned with a delight in pure and variegated colour. These splendid gifts were directed in a critical and fortunate moment by the genius of Rossetti. Hence a career which shows little waste or misdirection of power, and, granted the aim proposed, a rare level of real success. . . . .

[*See also Articles on* ROSSETTI, FORD MADOX BROWN, MILLAIS, *&c.*]

ART FOR ART'S SAKE.

From the Article on

Whistler.— . . . . . . In 1878 he brought a libel action against Ruskin for his criticisms in *Fors Clavigera* (1877). Ruskin had denounced one of his nocturnes at the Grosvenor Gallery as "a pot of paint flung in the public face." After a long trial, Whistler was awarded a farthing damages. His examination caused much interest, especially in artistic circles, on account of his attitude in vindication of the purely artistic side of art; and it was in the course of it that he answered the question as to how long a certain "impression" had taken him to execute by saying, "All my life." His eccentricity of pose and dress, combined with his artistic arrogance, sharp tongue, and bitter humour, made him one of the most talked-about men in London, and his *mots* were quoted everywhere. He followed up his quarrel with Ruskin by publishing a satirical pamphlet, *Whistler* v. *Ruskin: Art* v. *Art Critics.* In 1885 he gave his *Ten o'Clock Lecture* in London, afterwards embodied in *The Gentle Art of Making Enemies* (1890). The substance of this flippantly-written and amusing outburst was an insistence on the liberty of the artist to do what was right in his artistic eyes, and the inability of the public or the critics to have any ideas about art worth considering at all. . . . .

[*In connexion with these extracts should be read the Article on* RUSKIN, *and the brilliant Article* IMPRESSIONISM, *by* D. S. MACCOLL.]

THE BRITISH ART OF MEZZOTINT.

From the Articles (16½ pages) by P. G. HAMERTON, FREDERICK WEDMORE, GERALD P. ROBINSON, E. F. STRANGE, *and* M. H. SPIELMANN:

Engraving.— . . . . . . Of all the kinds of engraving, mezzotint comes nearest to nature, though it is far from being the best as a means of artistic expression. It is said to have been invented by Prince Rupert, or by Lewis Siegen, a lieutenant in his service, in or about the year 1641, and to have been suggested by the rust on a weapon which a soldier was cleaning. The plate is prepared (before any design is made upon it) by means of an instrument like a chisel, with the edge ground into the segment of a circle like the rocker of a cradle, and so engraved as to present when sharp about 100 or 120 small teeth. This cradle is rocked from side to side with the hand, and every tooth makes a small dent in the copper, and raises a corresponding bur. The whole surface of the plate is gone over with this instrument about eighty times, in different directions, before it is in a fit condition to be worked upon. When sufficiently prepared it presents a fine soft-looking and perfectly even grain; and if in this state a proof is taken from it by the usual process of copper-plate printing, the result is nothing but the richest possible black. The engraver works from dark to light by removing the grain with a scraper, and exactly in proportion as he removes it the tint becomes paler and paler. Pure whites are got by scraping the grain away entirely, and burnishing the place. As the process is from dark to light, the engraver has to be very cautious not to remove too much of his grain at once. He proceeds gradually from dark to half-dark, from half-dark to middle-tint, from middle-tint to half-light, and from half-light to light. He has nothing to do with line, but thinks entirely of masses relieved from each other by chiaroscuro. . . . . . As the art has been most practised in England, some of its most successful work has been employed in the translation of English artists. . .

Invention of mezzotint engraving. *Preparation of the plate.* *The process.*

During the 19th century two veritable revolutions occurred in the British art of Mezzotinto Engraving—"la Manière Anglaise." The original defect of the method was the incapacity of the mezzotint "bur" on copper to yield as many fine impressions as other forms of engraving. To this defect was attributable the introduction in 1823 of steel instead of the soft copper plates previously used, —a change which, in conjunction with the endeavour to avoid inherent technical difficulties, led to the "mixed style," or combination of mezzotint with etching, and a general departure from the traditional form of the art, "pure mezzotint" on copper. The affinity of the method to painting in black and white which differentiates it from other kinds of engraving, and was the distinguishing charm of the mezzotints of the 17th and 18th centuries, was for a time lost; but a revival of pure mezzotint on copper, beginning in 1880—a return, in fact, to the mode in which the classics of the art were engraved in the time of Sir Joshua Reynolds,—was made possible by the invention of steel-facing. By this process engraved copper plates are electroplated with a film of steel, renewable when worn in course of printing; and a mezzotint on copper, so protected, yields more of fine impressions than if it had been engraved on steel, whilst the painter-like quality remains unimpaired. . . . .

The classics of mezzotint engraving are to be found amongst the best plates after Sir Joshua Reynolds by James M'Ardell, J. R. Smith and Valentine Green, the Watsons, Dickinson, Fisher, Dixon, and some others, who worked during the last half of the 18th century. The brush-work of Reynolds was more in harmony with the mezzotint method than the slighter painting technique of Gainsborough and Romney, who were much less frequently engraved, perhaps because it is the highest technical difficulty in mezzotint to render the sharp edges of a sketch. For this reason a typical Gainsborough was never successfully engraved in the method. Though professional publishers and printers existed at this time and earlier, the word "excudit" on an old print implying "published," not "engraved," the authors of the "Sir Joshua" mezzotints in most cases printed, published, and sold their own works, and pure mezzotint, unmixed with etching, was almost exclusively the method they employed. Mezzotints were occasionally printed in colours, notably those engraved later after George Morland, the primary object being to conceal the worn-out condition of the plates.

The departure from pure mezzotint and temporary decay of the art began when, towards the end of the 18th century, Richard Earlom . . . . . . began to outline the details of his plates with stipple etching in order to avoid the labour and difficulty of scraping them to a sharp edge, using the "ground" alone. . . . .

[*The Tenth Edition contains Articles on* DRAWING, CARVING, FRESCO, ILLUSTRATION.]

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THE TEACHING OF ART IN ENGLAND.

From the Article (2 pages) by WALTER CRANE, formerly Principal of the Royal College of Art, South Kensington.

Art Teaching.— . . . . . . A growing conviction of the inadequacy of the schools of the Science and Art Department (now the Board of Education), considered as training-grounds for practical designers and craftsmen, led to the establishment of new technical schools in the principal towns of Great Britain. The circumstance of certain large sums, diverted from their original purpose of compensation to brewers, being available for educational purposes and at the disposal of the county councils and municipal bodies, provided the means for the building and equipment of these new technical schools, which in many cases are under the same roof as the art school in the provincial towns, although the connexion between the two is not so close as might be desirable. The art schools formerly managed by private committees and supported by private donors, assisted by the Government grants, are now, in the principal industrial towns of Great Britain, taken over by the municipality. Birmingham is singularly well organized in this respect, and its art school has long held a leading position. The school is well housed in a new building with class-rooms with every appliance, not only for the drawing, designing, and modelling side, but also for the practice of artistic handicrafts such as metal repoussé, enamelling, wood-carving, embroidery, &c. The municipality have also established a jewellery school, so as to associate the practical study of art with local industry. Manchester will shortly have a large new technical school, intended to combine the work of the existing technical school in Princess Street and the weaving school in Peter Street under one roof, with special classes for design; while the art school in Cavendish Street, with its museum, may remain as a high school of design, painting, and modelling. In Glasgow, which has now a distinct place in the modern development of art, both decorative and pictorial, under the headmastership of Mr Francis H. Newbery, the art schools are also under municipal management, and large new premises have been completed for the extension of work in the technical and practical direction. Leicester has an admirably equipped and organized art school in a fine building.

The important change involved in the incorporation of the Science and Art Department with the Board of Education has also led to a reorganization of the Royal College of Art. A special Council of Advice on art matters has been appointed, consisting of representatives of painting, sculpture, architecture, and design, who deal with the Royal College of Art, and appoint the professors who control the teaching in the classes for architecture, design and handicraft, decorative painting and sculpture, modelling, and carving. The council decide upon the curriculum, and examine and criticize the work of the college from time to time. They also advise the Board in regard to the syllabus issued to the art schools of the country, and act as referees in regard to purchases for the museum. New buildings for the Royal College of Art will be added to the new museum building now in course of erection. There will be a lower and a higher school in the college, and provision will be made for the practice of the artistic handicrafts. An etching and engraving class has existed since 1864. A stained-glass class was instituted in 1899, and these will be followed by classes for stone and marble carving, for metal work, and for pottery, while others will be added as space and organization admit. . . . .

[*For definitions of Art, see the Articles* ART, ÆSTHETICS.]

A GERMAN PAINTER OF MANNERS.

From the Article on

Menzel, Adolf.— . . . . . . In 1833 Sachse of Berlin published his first work, an album of pen-and-ink drawings reproduced on stone, to illustrate Goethe's little poem, "Künstler's Erdenwallen." He executed lithographs in the same manner to illustrate *Denkwürdigkeiten aus der brandenburgisch-preussischen Geschichte*, pp. 834–36; "The Five Senses" and "The Prayer," as well as diplomas for various corporations and societies. From 1839 to 1842 he produced 400 drawings, reviving at the same time the technique of engraving on wood, to illustrate the *Geschichte Friedrichs des Grossen* ("History of Frederick the Great") by Franz Kugler. He subsequently brought out *Friedrichs des Grossen Armee in ihrer Uniformirung* ("The Uniforms of the Army under Frederick the Great"), *Soldaten Friedrichs des Grossen* ("The Soldiers of Frederick the Great"); and finally, by order of the Emperor Frederick William II., he illustrated the works of Frederick the Great, *Illustrationen zu den Werken Friedrichs des Grossen*. . . . . . Meanwhile Menzel had set himself to study unaided the art of painting, and he soon produced a great number and variety of pictures, always showing keen observation and honest workmanship—subjects dealing with the life and achievements of Frederick the Great ("A Concert," see Plate) and scenes of everyday modern life, such as "In the Tuileries," "The Ball Supper," and "At Confession." . . . .

[*For an example of the art of Menzel, see the Plate on p. 129 of this pamphlet. The Tenth Edition is rich in critical biographies of the masters of German art.* DÜRER, CRANACH, SCHONGAUER, WOHLGEMUTH, DIETRICH, *are but a few of the names to which special articles have been devoted.*]

A SPANISH SATIRIST IN ETCHING.

From the Article on

Goya.— . . . . . . In portraiture, without doubt, Goya excelled: his portraits are evidently life-like and unexaggerated, and he disdained flattery. He worked rapidly, and during his long stay at Madrid painted, amongst many others, the portraits of four sovereigns of Spain—Charles III. and IV., Ferdinand VII., and "King Joseph." The duke of Wellington also sat to him; but on his making some remark which raised the artist's choler, Goya seized a plaster cast and hurled it at the head of the duke. There are extant two pencil sketches of Wellington, one in the British Museum, the other in a private collection. One of his best portraits is that of the lovely Andalusian duchess of Alva. He now became the spoiled child of fortune, and acquired, at any rate externally, much of the polish of court manners. . . . .

Including the designs for tapestry, Goya's genre works are numerous and varied, both in style and feeling, from his Watteau-like Al Fresco Breakfast, Romeria de San Isidro, to the Curate feeding the Devil's Lamp, the Meson del Gallo, and the painfully realistic massacre of the Dos de Mayo (1808). . . . He is much more widely known by his etchings than his oils; the latter necessarily must be sought in public and private collections principally in Spain, while the former are known and prized in every capital of Europe. The etched collections by which Goya is best known include Los Caprichos, which have a satirical meaning known only to the few. . . . .

[*See also the Articles* MORALES, VELAZQUEZ (4½ pages) MURILLO, ZURBARAN, FORTUNY, *&c.*]

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A MASTER PAINTER OF THE BALLET.

From the Article on

Degas.— . . . . . . He first exhibited in the Salon of 1865, contributing a "War in the Middle Ages," a work executed in pastel. To this medium he was ever faithful, using it for some of his best work. In 1866 his "Steeplechase" revealed him as a painter of the racecourse and of all the most modern aspects of life and of Parisian society, treated in an extremely original manner. He subsequently exhibited in 1867 "Family Portraits," and in 1868 a portrait of a dancer in the "Ballet of *La Source.*" In 1869 and 1870 he restricted himself to portraits; but thenceforward he abandoned the Salons and attached himself to the Impressionists. With Manet and Monet he took the lead of the new school at its first exhibition in 1874, and repeatedly contributed to these exhibitions (in 1876, 1878, 1879, and 1880). In 1868 he had shown his first study of a dancer, and in numerous pastels he proclaimed himself the painter of the ballet. . . . In the Centenary Exhibition of 1900 he exhibited "The Interior of a Cotton-Broker's Office at New Orleans" (belonging to the Museum at Pau) and "The Rehearsal."

[*For a reproduction of the famous picture "Danseuse sur la Scène" in the Luxembourg Gallery, see the Tenth Edition, which contains articles on MONET, MANET, COURBET, and many other painters of the later schools of France, besides the numerous articles devoted to the older masters.*]

THE INCOMPARABLE FLORENTINE.

From Prof. SIDNEY COLVIN'S Article on

Botticelli.— . . . . . . He went even beyond his master Lippo Lippi, and the sculptors Luca della Robbia, Donatello, and Desiderio da Settignano, in the touching and engaging character of the children who minister, in the form of angels, to his sacred personages. He designed choirs of such or of grown-up angels dancing between earth and heaven, or circles of them ranged in the order of the celestial hierarchies, with a variety of grouping and a graceful fire of movement that was a new thing in his art. One of the best examples of this kind of work is a round numbered 33 in the gallery of the Uffizi at Florence.

. . . .

[*In studying the painting of the Italian schools, no less than in studying that of the masters of England, France, Germany, Spain, and Holland, the Tenth Edition will be a guide of the greatest utility.*]

John Addington Symonds writes on the RENAISSANCE in Vol. 20.

A GREAT COURT PAINTER.

From the Article (5 pages) by HENRI HYMANS on

Van Dyck.— . . . . . . Van Dyck is one of the most brilliant figures in the history of art. . . . . . Rubens was exceptional precisely through the sweep and power of his imagination; but Van Dyck, applying the same principles to portrait painting, was no less exceptional. Titian, Raphael, Rembrandt, Velazquez, and Frans Hals are not, on the whole, superior to him in this branch. They often delight us with their technical excellence or penetrating study of individuality, but their conception remains entirely different from that of Van Dyck. . . . . . Burnet observes that with Van Dyck the union of the figure and the background seems to have been a principle, not only in respect of light and shade, but also of colour. Thus the shapes of his lights are extended or doubled by means of a curtain in the background, &c. Hence Van Dyck, quite unlike the Dutch, is not what may be termed an intimate portraitist. . . . .

[*Articles on MATSYS, SNYDERS, and many other Flemish masters are found in the Tenth Edition, besides articles on all the masters mentioned in the above extract.*]

THE PERFECTION OF LANDSCAPE PAINTING IN HOLLAND.

From the Article on

Hobbema.— . . . . . . Posterity has recognized that Hobbema and Ruysdael together represent the final development of landscape art in Holland. . . . . . Still their works differ in certain ways, and their character is generally so marked that we shall find little difficulty in distinguishing them, nor indeed shall we hesitate in separating those of Hobbema from the feebler productions of his imitators and predecessors — Isaac Ruysdael, Rontbouts, De Vries, Dekker, Looten, Verboom, Du Bois, Van Kessel, Van der Hagen, even Philip de Koningk. . .

[*The Tenth Edition will prove a valuable aid to the comprehension of Dutch painting at all periods.*]

"BREATHING MARBLE."

From the Article (15 pages) by Professor J. H. MIDDLETON, F.S.A., late Director, South Kensington.

Sculpture.— . . . . . . A large quantity of rich sculpture was produced in Naples during the 14th century, but of no great merit either in design or in execution. The lofty monument of King Robert (1350), behind the high altar of S. Chiara, and other tombs in the same church, are the most conspicuous works of this period. Very beautiful sepulchral effigies in low relief were produced in many parts of Italy, especially at Florence. The tomb of Lorenzo Acciaioli (see fig. 16), in the Certosa near Florence, is a fine example of about the year 1400, which has absurdly been attributed to Donatello. Rome was very remarkable during the 14th century for its extraordinary poverty in the production of sculpture. The clumsy effigies at the north-east of S. Maria in Trastevere are striking examples of the degradation of the plastic art there about the year 1400. . . .

Fig. 16.—Florentine marble effigy in low relief in the church of the Certosa near Florence.

[*The Article (20 pages) by M. H. SPIELMANN and LEONCE BENEDITE should also be consulted in the study of Sculpture.*]

AN ART IN WHICH DAI NIPPON EXCELS.

From the Article by Captain F. BRINKLEY.

Lacquer (Japanese).— . . . . . . The only branch of the lacquerer's art that can be said to have

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For an account of the Life and Works of MEISSONIER, see Volume 30 of the Tenth Edition.

"La Rixe." By Meissonier.
(*Buckingham Palace.*)

The Tenth Edition should be studied for the life histories of the Marshals of France.

For the Life of Marshal NEY see the Tenth Edition.

"1814." By Meissonier.
(*From a Photograph by Braun, Clement, and Co., Dornach (Alsace), Paris, and New York.*)

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shown any marked development in the *Meiji* era is that in which parts of the decorative scheme consist of objects in gold, silver, *shakudo*, *shibuichi*, iron, or, above all, ivory or mother-of-pearl. It might indeed be inferred, from some of the essays published in Europe on the subject of Japan's ornamental arts, that this application of ivory and mother-of-pearl held a place of paramount importance. Such is not the case. Cabinets, fire-screens, plaques, and boxes resplendent with gold lacquer grounds carrying elaborate and profuse decoration of ivory and mother-of-pearl are not objects that appeal to Japanese taste. They belong essentially to the catalogue of articles called into existence to meet the demand of the foreign market, being, in fact, an attempt to adapt the lacquerer's art to decorative furniture for European houses. On the whole it is a successful attempt. The plumage of gorgeously-hued birds—as peacocks, parroquets, pheasants, &c.—the blossoms of flowers (especially the hydrangea), the folds of thick brocade, microscopic diapers and arabesques, are built up with tiny fragments of iridescent shell, in combination with silver foil, gold lacquer, and coloured bone, the whole producing a rich and sparkling effect. . . . .

New development.

[*See also the Articles* JAPANNING, LACQUER, *&c.*]

THE POETRY OF THE NEEDLE.

From the Articles (3 pages) by MRS F. B. PALLISER, *and* LEWIS F. DAY, *Examiner for Art, Board of Education.*

Embroidery.— . . . . . . Homer makes constant allusion to embroidery. Penelope (to say nothing for her immortal web) throws over Ulysses on his departure for Troy an embroidered garment of gold on which she had depicted incidents of the chase. Helen is described as sitting apart, engaged in working a gorgeous suit upon which she had portrayed the wars of Troy; and Andromache was embroidering flowers of various hues upon a purple cloth when the cries of the people without informed her of the tragic end of Hector. In Greece the art was held in the greatest honour, and its invention ascribed to Minerva, and prompt was her punishment of the luckless Arachne for daring to doubt her supremacy in the art. The maidens who took part in the procession of the Panathenæa embroidered the veil or peplum upon which the deeds of the goddess were worked in embroidery and gold.

Phrygia became celebrated for the beauty of its needlework. The "toga picta" ornamented with Phrygian embroidery was worn by the Roman generals at their triumphs, and by their consuls when they celebrated the games—hence embroidery itself in Latin is styled "Phrygian," and the Romans knew it under no other name.

Babylon was no less renowned for its embroideries, and maintained its reputation up to the first century of the Christian era. Josephus tells us that the veils given by Herod for the temple were of Babylonian workmanship,—the women excelling, says Apollonius, in executing designs of varied colours. The Sidonian women brought by Paris to Troy embroidered veils of such rich embroidery that Hecuba deemed them worthy of being presented as an offering to Minerva; and Lucan speaks with enthusiasm of the magnificent Sidonian veil worn by Cleopatra at the feast she gave Cæsar after the death of Pompey. The embroidered robe of Servius Tullius was ornamented all over with the image of the goddess Fortune, to whom he ascribed his success, and to whom he built several temples. . . . .

[*See also Articles* TEXTILES, COSTUME, *&c.*]

THE REVIVAL OF AN ARTISTIC INDUSTRY

From the Article (2 pages) by ALAN S. COLE, *Author of "Ancient Needle Point and Pillow Lace."*

Lace.— . . . . . . An extraordinary demand for hand-made laces has led to a revival of this distinctly domestic industry in many parts of Europe, but particularly in Belgium, where the social and economic conditions are, as they have been in the past, more conducive and more favourable than elsewhere to its pursuit at a sufficiently remunerative rate of wages. The production of hand-made laces in Belgium was in 1900 greater than that of France. The principal needle-made lace of Belgium is the "Point de Gaze"; "Duchesse" and Bruges laces are the chief pillow-made laces; whilst "Point Appliqué" and "Plat Appliqué" are frequently the results not only of combining needle-made and pillow work, but also of using them in conjunction with machine-made net. Ireland is the best producer of that substantial looped-thread work known as crochet, which must be regarded as a hand-made lace fabric. It is in this respect quite distinct in character from pseudo-laces, which are really embroideries with a lace-like appearance, *e.g.*, embroideries on net, cut and embroidered cambrics and fine linen. For such as these Ireland maintains a reputation in its admirable Limerick and Carrickmacross laces, which are made not only in Limerick and Carrickmacross, but also in Kinsale, Newry, Crossmaglen, and elsewhere. . .

[*For description of the manufacture of Brussels lace, see article* BRUSSELS.]

SIMPLICITY AND RESERVE IN DECORATION.

From the Article by WALTER CRANE.

Arts and Crafts.— . . . . . The demand for the acknowledgment of the personality of each responsible craftsman in a co-operative work was new, and it had direct bearing upon the social and economic conditions of artistic production. The principle, too, of regarding the material, object, method, and purpose of a work as essential conditions of its artistic expression, the form and character of which must always be controlled by such conditions, had never before been so emphatically stated, though it practically endorsed the somewhat vague aspirations current for the unity of beauty with utility. Again, a very notable return to extreme simplicity of design in furniture and surface decoration may be remarked; and certain reserve in the use of colour and ornament, and a love of abstract forms in decoration generally, which are characteristic of later taste . . . if it has not turned all British craftsmen into artists or all British artists into craftsmen, has done not a little to expand and socialize the idea of art. . . .

[*See* FURNITURE, MORRIS, *&c.*]

EARLY CANDLE-PRICKETS.

From the Article (8 pages) by PROFESSOR J. H. MIDDLETON, *F.S.A., late Director, South Kensington.*

Metal Work.— . . . . . At the latter part of the 15th century and the beginning of the 16th the Pollajuoli, Ricci, and other artists devoted much labour and artistic skill to the production of candlesticks and smaller objects of bronze, such as door-knockers, many of which are works of the greatest beauty. . . . .

Niccolò Grossi, who worked in wrought iron under the patronage of Lorenzo dei Medici, produced some wonderful

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specimens of metal-work, such as the candlesticks, lanterns, and rings fixed at intervals round the outside of the great palaces (see Fig. 5). The Strozzi palace in Florence
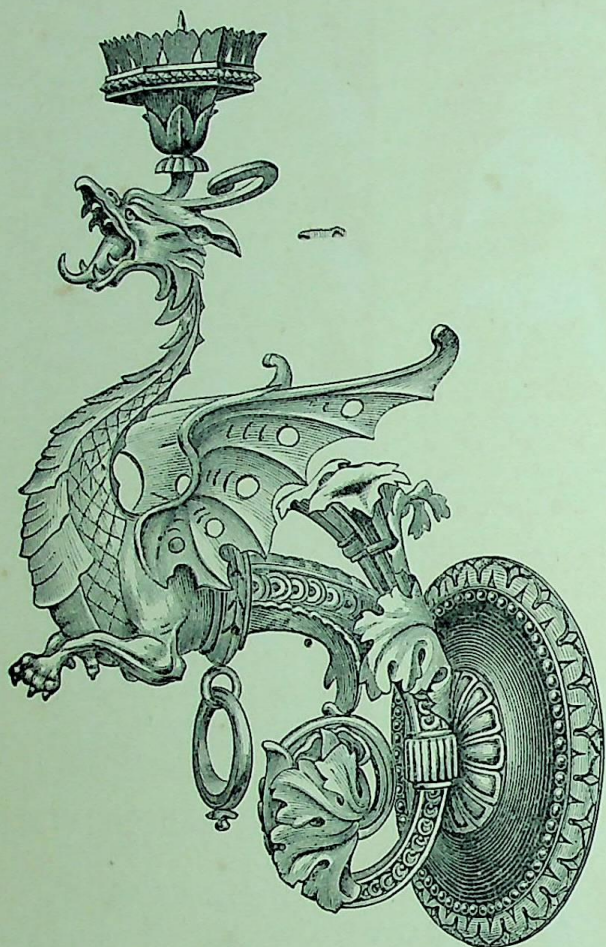
FIG. 5.—Wrought Iron Candle-Pricket; late 15th-century. Florentine work.

and the Palazzo del Magnifico at Siena have fine specimens of these,—the former of wrought iron, the latter in cast bronze. . . . .

[*See Articles* ART SALES, ART SOCIETIES, MUSEUMS, *&c.*]

A TECHNICAL ADVANCE.

From the Articles (6 pages) *by* F. W. RUDLER *and* ALEXANDER FISHER.

Enamel.— . . . . . . In the manufacture of the substance enamel a much greater advance has been made; for whereas the colours, and consequently the schemes of colour, were extremely limited, we now possess an infinite gradation in the colours, as well as the transparency and opacity, the hardness and softness, of enamels. There are only two colours which cannot yet be obtained: these are opaque vermilion and lemon yellow. Many of the colours we now employ were not known by such enamellers as Leonard Limousin. Our enamels are also perfect in purity, brilliancy, and durability, qualities which are largely due to the perfect knowledge of the proportion of parts composing an enamel, and their complete combination. . . . .

[*See also* JAPAN *for an account of the marvellous enamels of that country.*]

"FAKING" PLATES.

From the Article (20 pages) *by* Sir WILLIAM DE W. ABNEY, *K.C.B., F.R.S., late President Royal Astr. Soc.,* Major-Gen. J. WATERHOUSE, *Phot. Dept. Surveyor-General's Office, and* A. HORSLEY HINTON, *Ed. "Amateur Photographer."*

Photography.— . . . . . . But during the concluding quarter of the past century probably the most powerful influence in pictorial photography was that of H. P. Robinson, who, for a brief period about the year 1875, was one of the most prolific "picture makers." Inspired by Rejlander, of whom he was a contemporary, Robinson will perhaps be best remembered by his earlier advocacy of combination printing. As early as 1855 Berwick and Annan exhibited a photograph which was the result of printing from more than one negative, a figure from one plate being cunningly introduced in a print of landscape from another. Then came from Rejlander "The Two Ways of Life," in which, with wonderful ingenuity, thirty different negatives were combined. . . . .

Thirty Negatives.

[*See also the Article* PROCESS.]

The making of the index upon such a scale as to give to the *Encyclopædia Britannica* the utility of a dictionary, as well as that of a readable book, was in itself one of the most formidable tasks that could be imagined; but the practical value which has thus been given to the Tenth Edition is so great as to more than counterbalance the time and money expended. In its present form, and in view of the rapid spread of the English language to more and more remote parts of the world, the *Encyclopædia Britannica* is without a rival. In no other language can there be found any work which can be compared with it. The British public have of late heard so much of American competition, that none of us can but feel marked satisfaction when we reflect that the Americans have so fully recognized the superiority of at least one British production that they have not only preferred the *Encyclopædia Britannica* to any other book, but have actually purchased ten times as many copies of it as have been sold in the United Kingdom. It is beyond all question or challenge the accepted library of reference, the final authority on all disputed questions, wherever the English language is spoken.

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Painted borders from Kumbla Church, Sweden.

Decoration on north chancel wall, Amencharads Räda Church, Sweden.

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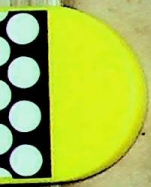
LINES OF DEVELOPMENT.

From the Article (20 pages) by R. PHENÉ SPIERS, F.S.A., *and* H. H. STATHAM.

Architecture.— . . . . . . It is necessary to take account of all these movements of opinion and principle in English architecture to appreciate properly its position and prospects at the time with which we are here dealing. Turning now from England to the United States, which, as already observed, is the only other important country in which there has been a general new movement in architecture, we find, singular to say, that the course of development has in America been almost the reverse of what has taken place in England. The rapidity of architectural development in America, it may be observed, during the last quarter of a century, has been something astonishing; there is no parallel to it anywhere else. Some thirty years ago, or even less, the currently accepted architecture of the American Republic was little more than a bad repetition of the English Gothic and Classic types of revived architecture. . . .

In the United States.
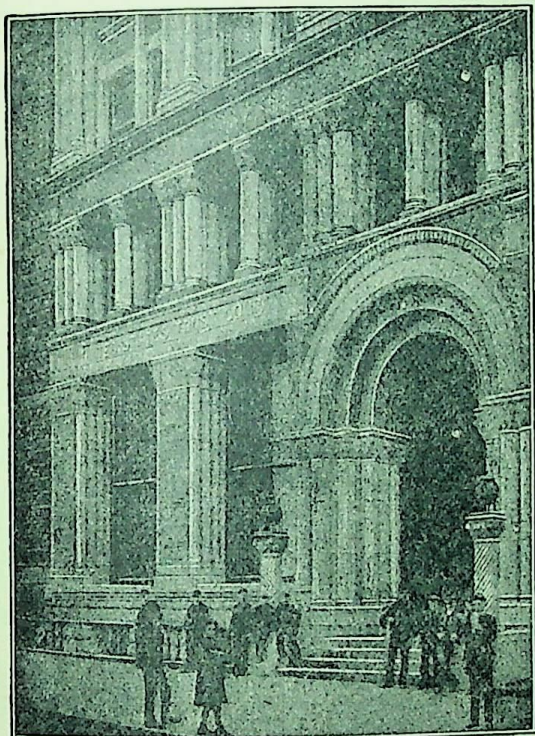
FIG. 5.—" Richardsonesque" Style—U.S. Trust Co., New York.

. . . . . . The first symptoms of an original spirit operating in American architecture showed themselves in domestic architecture, in town and country houses, the latter especially; and the form which the movement took was a desire to escape conventional architectural detail and to return to the simplest form of mere *building;* rock-faced masonry, sometimes of materials picked up on the site; chimneys which were plain shafts of masonry or brickwork; woodwork simply hewn and squared; but the whole arranged with a view to picturesque effect. . . . . About the same time an impetus of a more special nature was given to American architecture by a man of genius, the late H. H. Richardson, who, falling back on Romanesque and Byzantine types of architecture as a somewhat unworked field, evolved from them a type of architectural treatment so distinctly his own (though its *origines* were of course quite traceable) that he came very near the credit of having personally invented a style; at all events he invented a manner, which was so largely admired and imitated that for some ten or fifteen years American architecture showed a distinct tendency to become "Richardsonesque" (Fig. 5). . . . .

As with all architectural fashions, however, people got tired of this, and the influence of another very able American architect, the late R. Morris Hunt, who had received his education at the École des Beaux-Arts of France, coupled perhaps with the proverbial philo-Gallic tendencies of the modern American, led to the American architects, during the last decade of the century, throwing themselves almost entirely into the arms,

"Richardsonesque."
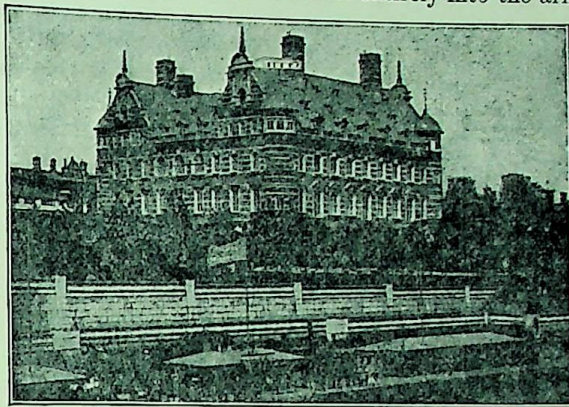
FIG. 14.—New Scotland Yard, showing roof. (*Norman Shaw.*)

as it were, of France. . . . . . . Among notable public buildings of the period ought to be mentioned Mr Norman Shaw's New Scotland Yard, built in a style neither Classic nor Gothic, but partaking of the elements of both. . . .

[*See also the Article* BUILDING.]

MODERN FRANCE AS A PIONEER IN ART.

From the Article (25 pages) by SPIELMANN, MUTHER, KNOPFF, *and* JOHN C. VAN DYKE, *L.H.D.*

Schools of Painting.— . . . . . . About the middle of the 19th century, after the vehement disputes between the partisans of line and the votaries of colour, otherwise the Classic and the Romantic schools, when a younger generation was resting from these follies, exhausted, weary, devoid even of any fine technique, two groups slowly formed on the opposite sides of the horizon —seers, or dreamers, both protesting in different ways against the collapse of the French school, and against the alleged indifference and sceptical eclecticism of the painters who were regarded as the leaders. This was a revolt from the academic and conservative tradition. One was the group of original and nature-loving painters, keen and devoted observers of men and things, the realists, made illustrious by the three great personalities of Corot (*q.v.*), Millet (*q.v.*), and Courbet (*q.v.*), the real originators of French contemporary art. The other was the group of men of imagination, the idealists, who, in the pursuit of perfect beauty and an ideal moral standard, reverted to the dissimilar visions of Delacroix and Ingres, the ideals of rhythm as opposed to harmony, of style *versus* passion, which Théodore Chassériau had endeavoured to combine. Round Puvis de Chavannes (*q.v.*) and Gustave Moreau (*q.v.*) we find a group of artists who, in spite of the fascination exerted on their intelligence by the great works of the old masters, especially the early Florentines and Venetians, would not accept the old technique, but strove to record in splendid imagery the wonders of the spiritual life, or claimed, by studying contemporary individuals, to reveal the psychology of modern minds. . . . .

[*See also the Articles* ROYAL ACADEMY, PORTRAITURE, MURAL DECORATION.]

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To Each of the 138 Artists whose names are contained within this Frame a separate article has been devoted in the TENTH EDITION of the ENCYCLOPÆDIA BRITANNICA.

ANDREA DEL SARTO
ANDREA ANDREANI
L. BATTISTA ALBERTI
BACCIO DELLA PORTA
GENTILE BELLINI
GIOVANNI BELLINI
JACOPO BELLINI
SANDRO BOTTICELLI
BENVENUTO CELLINI
GIOVANNI CIMABUE
CORREGIO (ALLEGRI)
LUCAS CRANACH
ALBERT CUYP

ALBRECHT DURER
HANS HOLBEIN
FRANZ HALS

HUBERT VAN EYCK
JOHN VAN EYCK
FRANCISCO Y L. GOYA
Ridolfo GHIRLANDAJO
LUCA GIORDANO
Giorgio BARBARELLA
GIOTTO DI BONDONE
J. BAPTISTE GREUZE
WILLIAM HOGARTH
GODFREY KNELLER
NICHOLAS LANCRET
EDWIN LANDSEER
THOMAS LAURANCE

BEAUTY IN DAILY LIFE.

It is not only in the history of Painting, as illustrated in the lives of the Masters, ancient and modern, that the Tenth Edition is rich in material for the student of Art. Such articles as **SCULPTURE, PHOTOGRAVURE, MURAL DECORATION, METAL-WORK, MOSAICS, BOOK-BINDING, PROCESS, ARTS AND CRAFTS,** and many others, serve to show how exhaustively, and with what reverence and authority, every kind of beauty has received treatment in the *Encyclopædia Britannica*. The clothes we wear, the vessels we drink from, the houses we live in, will become sources of an interest removed from that of mere utility if we learn from such articles as **COSTUME, GLASS,** and **ARCHITECTURE** to perceive the infinite possibilities of their design, colour, and material.

THE SECRETS OF ART.

The collection of Illuminated Manuscripts at the British Museum will become infinitely more interesting to us after we have read the article **ILLUMINATION** in the Tenth Edition. The Lace at South Kensington will look twice as beautiful to a man who has first studied the subject in the article **LACE.** The Jewels in Bond Street and the Rue de la Paix, no less than the famous national collections all over the world, will acquire a fresh and deeper interest for us when we have read the article **JEWELLERY.** Such contributions as those on **FILIGREE, MINIATURES, ENAMEL, POTTERY AND PORCELAIN, TILES,** will disclose many secrets, the discovery of which will convert unlettered enthusiasm into sound knowledge and well-balanced discrimination.

PUBLIC ART INSTITUTIONS.

The Picture Galleries and Art Museums of London, Paris, Berlin, Vienna, Madrid, Rome, and St. Petersburg dazzle the eyes of casual spectators with long vistas of art treasures, and a sense of disappointment often oppresses us in spite of the delight which the anticipation of our visit had awakened. The need for some preliminary introduction to so bewildering a form of entertainment and education has long been felt. In his article on **ART GALLERIES,** Lord Balcarres provides an agreeable preface to our comprehension of the great Art Collections of the world; Mr. Walter Crane on **ART TEACHING** and **ARTS AND CRAFTS** helps us still further to an appreciation which is difficult to gain unaided; while the article **MUSEUMS,** besides enumerating the chief Museums in the world, throws valuable light on the more modern phases of thought in connexion with the maintenance, plan of disposition, and administration of the Art Corporations in capital cities.

ARTISTS ON ART SUBJECTS.

Of distinguished contributors to the Tenth Edition in the department of Art there is overwhelming abundance. Its pages are adorned with the work of the late Professor Middleton, Professor Sidney Colvin, Sir William Richmond, Mr. Frederick Wedmore, the late W. Cosmo Monkhouse, Mr. Egerton Castle, Mr. Laurence Housman, Mr. Laurence Binyon, Mr. Austin Dobson, Mr. D. S. MacColl, Mr. Joseph Pennell, Sir Edward Maunde Thompson, and such a variety of authorities on every branch of Art as to defy enumeration. Sir Geo. Reid, P.R.S.A., contributes a valuable article on **PORTRAIT PAINTING.** Nor should mention be omitted of Professor James Sully's **ÆSTHETICS,** in which the relation of pleasure and art is intimately discussed. The most fatuous of all forms of writing—Art talk by the artless, has been altogether avoided in the Tenth Edition. Every subject with which Art is concerned has been treated by some one among the recognized artists or accepted critics of our time.

PAUL J. A. BAUDRY
J. BASTIEN-LEPAGE
ANTOINE L. BARYE
AUBREY BEARDSLEY
ARNOLD BOCKLIN
JOS. EDGAR BOEHM
M. ROSA BONHEUR
ADOL. BOUGUEREAU
FORD MADOX BROWN
HABLOT K. BROWNE
EDW. BURNE-JONES
BAPTISTE CARPEAUX
VICAT COLE
SIDNEY COOPER
GEORGE CRUIKSHANK
PUVIS de CHAVANNES
J. B. E. DETAILLE
DIAZ
DEGAS
COROT
COURBET
MONET
MANET
RICHARD DOYLE
GEORGE du MAURIER
MARIANO J. FORTUNY
LOUIS GALLAIT
J. L. CHAS. GARNIER
JEAN LEON GEROME
SIR JOHN GILBERT
KATE GREENAWAY
J. JACQUES HENNER
FRANK HOLL
JAMES CLARKE HOOK
J. CALCOTT HORSLEY
HOLMAN HUNT
JOSEF ISRAELS
CHAS. SAMUEL KEENE
C. GORDON LAWSON
JOHN LEECH

LEONARDO DA VINCI
FRA FILIPPO LIPPI
FILIPPINO LIPPI
LORENZO LIPPI
ANDREA MANTEGNA
Tommaso G. MASACCIO
HANS MEMLING
GABRIEL METSU
MICHEL ANGELO
Bartolomeo MURILLO
Arcagnuolo (ORCAGNA)
ADRIAN OSTADE
ISAAC OSTADE
Girolamo PARMIGIANO
PIETRO PERUGINO
PAUL POTTER
NICHOLAS POUSSIN
ROMNEY
RAEBURN
REYNOLDS
ROSSETTI
RUSKIN
WILSON
RAPHAEL SANZIO
SALVATOR ROSA
REMBRANDT
LUCA DELLA ROBBIA
P. PAUL RUBENS
JACOB RUYSDAEL
DAVID TENIERS
TIZIANO VECELLIO
J. M. W. TURNER
ADRIAN van de VELDE
ANTHONY van DYCK
D. VELASQUEZ
ANTOINE C. H. VERNET
EMILE J. H. VERNET
PAOLO VERONESE
ANTOINE WATTEAU
Francisco ZURBARAN

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ALBERT MOORE
WILLIAM MORRIS
M. VON MUNKACSY
W. Q. ORCHARDSON
J. EVERETT MILLAIS
JOSEPH NOEL PATON
JOHN PETTIE
EDWARD J. POYNTER

F. von LENBACH
ALPHONSE LEGROS
J. McNEILL WHISTLER

W. BLAKE RICHMOND
BRITON RIVIERE
FELICIEN ROPS
FREDERICK SANDYS
GIOVANNI SEGANTINI
LOUIS ALMA TADEMA
JOHN TENNIEL
T. JOSEPH TISSOT
DANIEL VIERGE
GEO. FRED. WATTS
BENJAMIN WEST
THOMAS WOOLNER
E. C. G. WAPPERS

The names within this list are only a part of those forming a complete list of the Artists to each of whom the Tenth Edition of the Encyclopædia Britannica devotes a separate article.

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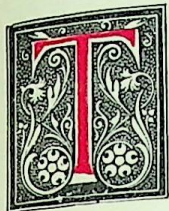
LITERATURE

For books are not absolutely dead things, but do contain a potency of life in them to be as active as that soul was whose progeny they are; nay, they do preserve as in a vial the purest efficacy and extraction of that living intellect that bred them.—MILTON.

THE Encyclopædia Britannica has long occupied a distinguished place in the best literature of the English-speaking world. It is probably the literary quality of its articles which has secured for them a public, not only of specialists and scholars, but also of those to whom the pleasure felt in the pursuit of knowledge is increased by the attraction of style in writing. The names of such contributors as Walter Scott, Macaulay, Hazlitt, De Quincey, and many other great figures in the history of English letters, have been largely responsible for the reputation with which the book is associated. But it was not only by the contribution of their own articles that these men did service: they established a tradition for their successors. And thus while care has always been taken to secure men of high literary attainment, the contributors themselves, however able or distinguished, have felt it an honour to write for the Encyclopædia Britannica, and under the stimulus of a worthy emulation have given of their best to its pages.

The term Literature is synonymous with the finest expression of the finest thought in every department of human knowledge, in every age, and in every tongue. If we would understand the characteristics which are associated in our mind with modern nationality and all that it implies, it is to the literature of the separate countries which together form the world that we must turn for study. England without a knowledge of Shakespeare, Germany unillumined by the Master Goethe, France without the penetrating ray of Voltaire's criticism, are but shadowy figments in the brain. Moreover, the story of literary development, from primitive utterance to the perfection of prose and verse, may be read and grasped with an interest as absorbing as that of any single romance.

There is hardly any kind of book to which the Encyclopædia Britannica is not an invaluable supplement of information. Suppose we are reading Scott's Talisman. We wish to penetrate to the mental atmosphere in which the author put new and romantic life into the exploits of Richard Cœur de Lion and Saladin. A rapid excursion into the article CRUSADES will carry us into the enchanted region of our author. When we return to The Talisman it will be with a fresh interest in our subject and a higher appreciation for our author. This is only one of many instances. A double interest is felt in Lord Lytton's Rienzi if the novel is read by the light of that information which the article ROME in the Encyclopædia Britannica sheds on the historical aspect of the subject. Thackeray's Esmond, Dickens's Tale of Two Cities, Charles Reade's Cloister on the Hearth, Meredith's Vittoria, can only strike the reader in the fulness of their meaning if he realizes the facts in the minds of their authors when they were immersed in the epochs of which they wrote, and the Encyclopædia Britannica will put him in possession of such facts.

The addition of an Index (Vol. 35) to the Tenth Edition is an eloquent recommendation of the work to all lovers of literature, for thus, in addition to its attraction as a book to read in an idle hour, it has acquired the uses of an exhaustive book of reference on the largest as well as the minutest literary topics; it provides at once the key to a school of thought, or the date and circumstances marking the publication of a poem or prose work, little noticed perhaps at the time, but destined by the light of subsequent development to mark an era or the exact point of departure from a tradition.

FROM CHAUCER TO 1902.

From the Article (32 pages) by THOMAS ARNOLD, M.A.

English Literature.— . . . . . . In the reign of Henry III. a strong effort was made to make French the exclusive literary language of the English people. It was a struggle between the tongue of the upper class and the tongue of the middle class. . . . .

THE FIRST BOOK IN ENGLISH.

The first book certainly known to have been printed in England is the *Dictes and Sayings of the Philosophers*, a translation from the French; this was printed by Caxton in 1477, within the precincts of the abbey of Westminster. The monks of St Alban's soon set up a printing-press in their great monastery; and Oxford and Cambridge quickly followed suit. For fifteen years more Caxton laboured diligently in his vocation, and at his death in 1492 left the art of printing firmly established in England. An examination of the list of works which he printed shows what branches of literature were most in esteem in the English society of his day. Professor Craik enumerates forty-five works, which comprise all Caxton's more important typographical performances. Of these, thirteen are religious and devotional, twelve are works of romance and chivalry or other prose fiction, seven are historical or legal works, five are English versions of classical authors, five handbooks or didactic works, and three editions of English poets. . . . .

REVIVAL OF GREEK STUDY.

The story of the revival of Greek studies in Italy, towards the end of the 14th century, is as exciting to a sensitive intellect as any romance. Gradually the contagion of the learned frenzy which created a hundred academies and literary societies in the Italian cities spread itself across the Alps. England was but a very little, if at all, behind France. The steps by which a change of so much importance to literature was effected seem to be worth tracing with some minuteness.

. . . .

It is a lamentable fact that after this brilliant opening of the study of the humanities at Oxford, the dawn was overcast, and a dismal reaction set in. Erasmus tells us that, about 1518, a body of brutal obscurantists appeared in the university, who, calling themselves Trojans, attempted by ridicule and petty persecution to discourage the study of

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Greek. It was on this occasion that More wrote his *Epistle to the University* (1519), complaining that the party of the barbarians was not put down. The king was induced to interfere, and the nuisance was after a while suppressed. At Cambridge, though the study of Greek appears to have been introduced later than at Oxford, it was carried on without check or discouragement, and was supported by endowments at an earlier period than at the sister university.

A PERIOD OF RETROGRESSION.

. . . . There is a well-known passage in Ascham's *Schoolmaster*, where, speaking of Cambridge in Mary's time, he says, that "the love of good learning began suddenly to wax cold, the knowledge of the tongues was manifestly contemned; the truth being," he goes on to say, "that plans were laid by the university authorities to bring back the works of Duns Scotus, and all the rabble of barbarous questionists," into the academical course, in the place of Aristotle, Plato, Cicero, and Demosthenes. To throw contempt on the schoolmen,—though it was not confined to the Protestants, for More, Erasmus, Colet, Pace, and many other Catholics had expressed more or less of a similar aversion,—yet was characteristic of them, for their theologians without exception rejected the *Schola.* Therefore Gardiner and Bonner appear to have resolved to force scholasticism on the young men of their day, simply because they did not like it.

TRANSLATION IN THE TIME OF ELIZABETH.

In the first twenty years of the reign of Elizabeth, though exact scholarship did not flourish much, there was a great and very beneficial activity in the work of making translations from the classics. The names of Golding, North, Phaier, Marlowe, and Stanihurst indicate the authors of the chief of these. Fairfax and Harrington translated the master-pieces of Tasso and Ariosto. But for the ample store of fresh materials thus supplied, the genius of Shakespeare, who had not a university education, must have displayed itself under comparatively restricted forms.

SKELTON.

. . . . In Skelton almost the only poet of the first twenty years of Henry VIII.'s reign, the coarser fibres of the English nature are offensively prominent . . . His attacks on Wolsey's pride, luxury, and sensuality are well known, nor can it be said that they were not deserved; still, as proceeding from an incontinent priest, they remind us unpleasantly of 'Satan reproving sin." . . . .

SCOTCH POETS.

In Scotland there arose in this period several poets of considerable mark, all of whom, in respect of their turn of thought and the best features of their style, may be properly affiliated to Chaucer. Henryson wrote in "rhyme royal"—Chaucer's favourite metre—the *Testament of Faire Creseyde*, a sort of supplement to Chaucer's *Troylus and Cryseyde.* In the poetical remains of Gawain Douglas, bishop of Dunkeld, there is much melody and sweetness. In the poems of Dunbar the influence of Chaucer is especially noticeable. *The Thistle and the Rose* and the *Golden Terge* are poems of the same class as the *Assembly of Foules* and the *Court of Love;* the allegoric form, and the machinery of dream and vision, are employed in both. Sir David Lyndsay began by being a great admirer and imitator of Chaucer, but the Teutonic affinities of his mind waxed ever stronger, and he ended by gaining great temporary fame as the author of coarse and ribald satires, directed against the abuses of his day, especially those which deformed the church. . . .

THE OLD CIVILIZATION IN CONFLICT WITH PURITANISM.

Regarding the position of the Roman see in the Christian church as a "separable accident," the acceptance or rejection of which made no essential difference, the literary men of the latter part of the reign of Elizabeth, while rejecting, chiefly on political grounds, the authority of that see, had no quarrel in other respects with the religion which had come down to them from their forefathers, nor with the forms of civilization and efforts towards a higher culture which that religion had encouraged.

On the outbreak of civil war the Puritans, gaining the upper hand in London, immediately shut up the theatres. It is not, therefore, without reason that we have characterized the epoch which we are considering as that of the "conflict between Puritanism and the old civilization."

Poetry, which does not, like the drama in its more developed stages, require any local establishment in order to produce its effects, pursued its flight in defiance of Puritan censure. It was not, however, unaffected by it. The disapproval of him and his works, entertained by a large section among the most virtuous of his countrymen, irritated the poet by its exaggeration, and often made him out of recklessness import an additional degree of licence into his language. Yet morality was in the end the gainer. For in spite of narrowness, and exaggeration, and occasional hypocrisy, there was real earnestness and virtuous intention in the great body of the Puritans; and to these qualities society eventually did homage by refusing to tolerate, in poetry at least, what was openly and scandalously immoral. In spite of one or two who leap over the line, poetry in the 18th century, and still more in the 19th, has not permitted her votaries to write as they please, but has prescribed to them measure and seemliness.

THE AGE OF QUEEN ANNE.

Weary of life, Dryden had descended into the tomb; and his mantle had fallen on no poet. Grateful for support manfully rendered when all the world was against him, he had, in some moving and musical lines, designated in Congreve the successor to his fame—

> "Let not the insulting foe my fame pursue,
> But shade those laurels which descend to you:"

but that cold man of fashion never rose above the point which he had reached in the *Mourning Bride.* A poet, however, appeared before long, but he was a Whig poet; that is, he represented respectability, commonsense, and the *juste milieu;*—the cause which fires the blood, the ideal which kindles the imagination, were strange to him. This was Addison, whose *Campaign* (1704), an heroic poem on the battle of Blenheim, is much in the style of that portion of Dryden's *Annus Mirabilis* which describes the duke of York's victory over the Dutch fleet, but is written with more care and more concentration. To the production of *Cato*, Addison seems to have been induced partly by his protracted stay in Italy (where his attention was engrossed by classical monuments, and turned with indifference from mediæval), partly by the desire to win laurels in the field where Corneille and Racine had shone with such distinction, and to show that an English dramatist could be as *correct* as they.

MASTER NOVELISTS.

Fielding's *Tom Jones* and *Amelia*, Richardson's *Clarissa Harlowe* and *Sir Charles Grandison*, made the same kind of stir in general society that had been caused by Dryden's heroic plays some eighty years before. An ingenious French critic (Philarète Chasles) has attempted to trace in the works of these writers the conflict, though much transformed, of the Puritans and Cavaliers of an earlier age. Lovelace, he thinks, represents the insolent temper and

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disregard for morality of the aristocratic Cavaliers; Clarissa, his victim, the daughter of a virtuous middle class family, exhibits the substantial rectitude of that "good old cause," which licentious courts could persecute but could not subdue. Fielding, the aristocrat, recalls and continues the jovial recklessness of the men of the Restoration; Richardson, the plebeian, is in the line of Milton, Penn, Fox, Bunyan. . . . .

THE INFLUENCE OF FRENCH THOUGHT.

Probably there was not a single gifted mind in any country of Europe upon which the tempest of the French Revolution did not come with a stimulating or disturbing influence. Young men,—hasty counsellors ever, from the days of Rehoboam,—thrilled with hope and flushed with excitement, announced and believed that a golden age had opened for mankind. Wordsworth hastened from Cambridge in 1792 to France, where he lived more than a year, and formed some Girondist acquaintances; Coleridge invented a scheme for an ideal community which was to form a model settlement, to be conducted on principles of pantisocracy, on the banks of the Susquehanna; Southey nearly got himself into trouble by publishing *Wat Tyler*, a dramatic sketch of an inflammatory and seditious character. On the other hand, the young Walter Scott looked with shrewd, clear eyes on the tumultuous scene, and was not tempted to throw himself into the vortex; for him the treasures of Europe's mighty past were real and precious, and not to be bartered for any quantity of visionary hopes and fairy gold. Soon the proceedings of the Revolutionists made it clear enough that human nature and human motives were not changed; and the ranks of reaction were rapidly filled. In England an immense effect was produced by the appearance of Burke's *Reflections on the French Revolution* in 1791. The sympathizers with the French republicans dwindled in number so fast, that at the end of the century, as it was sportively said, the whole of the opposition to Pitt's Government in the House of Lords went home from the debate in a single hack cab. Wordsworth, Southey, and Coleridge changed round to the Conservative side. The appearance in France of the *Génie du Christianisme* (1802) by Chateaubriand marked the commencement of the great continental reaction.

THE EDINBURGH REVIEW.

Reference was made above to the commencement of the *Edinburgh Review* in 1802. The tendencies of thought which distinguished its founders were of so remarkable a character,—exercised so marked an effect on the philosophy, the legislation, and even the literature of their times,—and are still so influential, that some attempt to analyse and describe them must be made. There were varieties of opinion among the writers for this celebrated review from the first; amongst them were mere Whigs and mere literary critics, but that which gave it a backbone was its being partially the organ of a party, known some years later by the name of "Philosophical Radicals." This school took its philosophy from Locke, Bentham, and Adam Smith. . . . .

Byron and Shelley were cut off in the flower of their days; Southey's overtasked brain gave way some years before his death, and the same fate befell Ireland's gifted singer, Thomas Moore. Scott, ruined through too much haste to be rich, literally worked himself to death to clear off the mountain of liability which his implication in Ballantyne's failure had thrown upon him. Coleridge, though he lived to old age, had weakened a will originally irresolute, and shattered nerves originally over-sensitive by the fatal practice of opium-eating; in the time of grey hairs he subsided into a dreamy talker about "sum-in-ject" and "om-in-ject." Wordsworth alone preserved to the last an unimpaired sanity of mind and body, for which he might thank the simplicity and serenity of his life in Westmoreland, where he settled on his return from France.

[Below is appended a list of a few of the subjects treated in the article *ENGLISH LITERATURE*, of which the above extracts form only an imperfect skeleton.]

Adamnan.
Addison, Joseph.
Ælfric.
Alcuin.
Aldhelm, St.
Alexandreis.
Alfred, King.
Alliterative metre.
Alliterative poets.
Andreas.
Anslem, St.
Arthurian romance.
Ascham, Roger.
Bacon, Sir Francis.
Bacon, Roger.
Barrow, Dr Isaac.
Beaumont and Fletcher.
Beda, the Venerable.
Behn, Aphra.
Benoit de Ste More.
Beowulf.
Berkeley, Bishop.
Boniface, St.
Bunyan, John.
Burke, Edmund.
Burns, Robert.
Butler, Bishop.
Butler, Samuel.
Byron, Lord.
Cædmon.
Caxton, William.
Chateaubriand.
Chaucer, Geoffrey.
Churchill, Charles.
Cibber, Colley.
Colet, Dean.
Comedy, English.
Congreve, William.
Cowley, Abraham.
Cowper, William.
Cranmer, Thomas.
Crist.
Cynewulf.
Danes. Defoe.
Deists, English.
Denham, Sir John.
Deor's Complaint.
Dryden.
Dunbar, William.
Dunstan, St.
Durham Gospels.
Edinburgh Review.
Elene.
Elizabethan drama.
Elizabethan literature.
English language, ascendency of the.
Erasmus.
Euphuism.
Evrard's *Disticha.*
Exeter Codex.
Fiction, works of.
Fielding, Henry.
Fisher, Bishop.
Florence of Worcester.
Fortescue, Sir John.
Gaimar, Geoffrey.
Geoffrey of Monmouth.
Gibbon, Edward.
Gildas. Godric, St.
Goldsmith, Oliver.
Gower, John.
Greek.
Grocyn, William.
Grosseteste, Robert.
Guthlac, St.
Hartley, David.
Havelok, romance of.
Hawes, Stephen.
Heywood, John.
Higden, Ranulf.
Hobbes, Thomas.
Hooker, Richard.
Hume, David.
Huntingdon, Henry of.
Hutcheson, Francis.
Hypocrite, The.
Iona, influence of.
James I. of Scotland.
Jewel, Bishop.
John of Salisbury.
Johnson, Dr Samuel.
Jonson, Ben.
Juliana.
Kant, Immanuel.
King Horn.
Lancelot.
Langland, William.
Langtoft, Peter.
Latimer, Hugh.
Layamon.
Leviathan, The.
Lilye, William.
Linacre, Thomas.
Lindisfarne, destruction of.
Locke, John.
Lombard, Peter.
Lydgate, John.
Lyly, John.
Lyndsay, Sir David.
Mabinogion, The.
Malmesbury, William of.
Malory, Sir Thomas.
Manning, Robert.
Map, Walter.
Marlowe, Christopher.
Milton, John.
Miracle plays.
Moral plays.
More, Sir Thomas.
Nennius.
Northumbria, literary development in.
Ormin.
Paris, Matthew.
Pecock, Reginald.
Philosophical radicals.
Players.
Pope, Alexander.
Priestley, Dr Jos.
Printing.
Prynne, William.
Roid, Dr Thomas.
Richardson, Samuel.
Robert of Gloucester.
Robertson, Dr William.
Roland, Chanson de.
Romances, English.
Round Table.
Sackville, Thomas.
Saint Graal.
Saxon Chronicle.
Scott, Sir Walter
Selling, William.
Shaftesbury, Lord.
Shakespeare, William.
Shelley, Percy B.
Sheridan, Richard B.
Sidney, Sir Philip.
Skelton, John.
Smith, Adam.
Smollett, Tobias.
Southwell, Robert.
Spectator, The.
Spenser, Edmund.
Stage.
Steele, Richard.
Sterne, Lawrence.
Stewart, Dr Dugald.
Surrey, Earl of.
Swift, Dean.
Taylor, Jeremy.
Tragedy, English.
Translators, under Elizabeth.
Traveller, The.
Triads, The.
Tristan.
Trivet, Nicholas.
Turoldus.
Tyndale, William.
Udall, Nicholas.
Vercelli Codex.
Wace, Robert.
Walden, Thomas.
Waller, Edmund.
Warham, Archbishop.
Welsh poetry of the 12th century.
Wessex, literary development in.
Wickliffe, John.
Wordsworth, William.
Young, Edward.

For the comprehensive survey of English Literature since the year 1879 until the present time, with its list of names, the nearness of whose fame inspires us with the direct enthusiasm called forth by every form of contemporary history, the reader should consult the critical narrative of Mr Edmund Gosse. Here—to mention only a few of its more salient features—he will find discussed: the poetry of the Rossettis and William Morris with that of the so-called "Parnassian School" which succeeded them, the poetry of the "Celtic" spirit, the Imperialist or Nationalist school of poetry, the later representatives of Victorian fiction, and the almost incredible growth of the novel as a form of national literature. History, Criticism, the Essay, Biography, in the last quarter of the century, are reviewed by the author with minute discretion and fine literary perception.

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SCHOOLS OF FICTION: ZOLA.

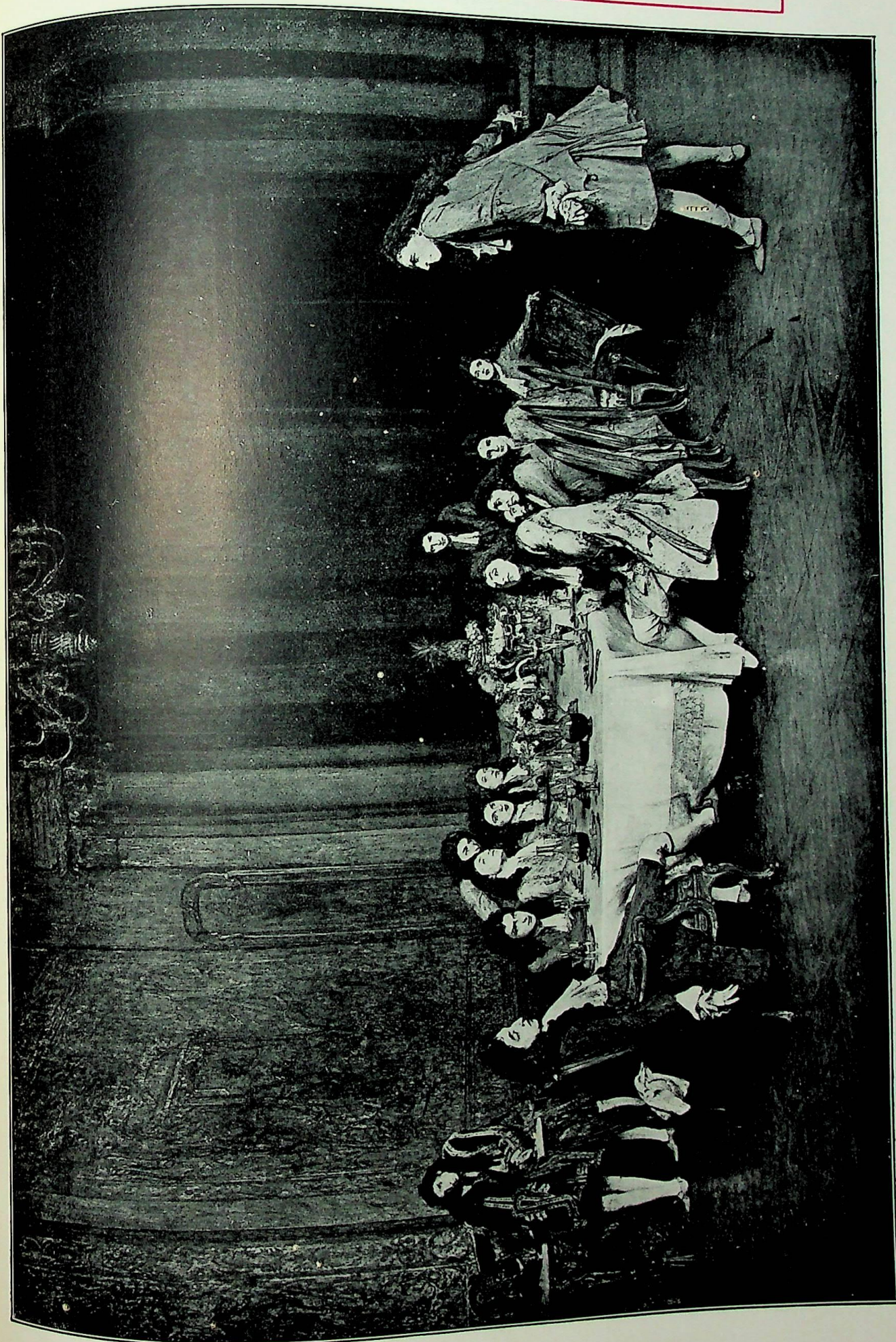
From the Articles (89 pages) by J. E. C. BODLEY, the Hon. MAURICE BARING, and GEORGE SAINTSBURY, M.A.

France.— . . . . . . The salient feature of the history of French literature from 1880 to 1900 is the progress of a reaction against what was somewhat inaccurately called the Realistic school. The Romantic school was paramount during the first half of the 19th century, and it was not until after 1850 that the Naturalistic movement prevailed. This movement derived its origin from the naturalist philosophy, which developed in France under two different forms:—(1) The simple theory of sensation of Condillac; (2) the Positivism of Comte. From the first we get the sensuous realism of Gautier and Flaubert; from the second the naturalism of M. Zola. Gautier develops the theory of "art for art's sake" in his Preface to *Mademoiselle de Maupin*, which was the manifesto of a school represented by Gautier, Flaubert, Bouilhet, and, with certain modifications, by Leconte de Lisle, Théodore de Banville, and the Goncourts. In the period here under consideration the representatives of this school are the "Parnassian" poets; among the novelists, the Goncourts alone, and they only in a modified degree, belong to this category.

The watchword of the Utilitarian school was "Art for Utility's sake," and its philosophy was that propounded by Auguste Comte in 1830 and popularized by Taine. The doctrine that science, based on the only trustworthy data, those of the senses, should be the sole guide of the human mind was adopted by M. Zola and his disciples. The aim of the school was to do away with all convention; to institute a searching and exhaustive inquiry into human nature; to discover the human "document"; to present what they termed a "slice of life" without beginning or end, the personality of the author being eliminated. These theories, however, were never rigidly practised by their propounders. M. Zola himself admitted that "the realistic novel was a corner of nature seen through a temperament." Not only were the leaders of the school forced to relax the severity of their precepts, but it soon became apparent that the term was in reality a misnomer, and that in many cases the theories of the school were merely confuted by the practice of its disciples. For if Defoe, Lesage, and Tolstoi are realists in the true sense of the word, then assuredly is M. Zola something different. So far from seeing life "steadily" and seeing it "whole," as Matthew Arnold inculcated, Zola confines himself to the study of the baser and the brutal elements in man and nature while he eliminates the soul; moreover, he saw the elements to which he confined himself through the distorting glass of a pessimistic and imaginative temperament, so that he evokes monstrous and monotonous visions for us, phantasmagorias of ugliness and crime, sordid and sombre panoramas which are impressive from their very size and from the violence and heaviness with which the coarse colours are laid on the canvas. His work, however, is not lacking in an element of grandeur; thus we get the epic of the train, the mine, the shop, and the battlefield, but never truly realistic studies of contemporary life.

The Realistic school may be said, therefore, to have merely succeeded in substituting one convention for another; but this is only true so far as concerns the theories of the school and those authors who slavishly adhered to it. Maupassant, for instance, who belongs to the Realistic school, was a true Realist, not because he adopted any particular theories, but because he was enabled by his temperament to look on life with penetrating eyes, and by his talent to depict what he saw with unsurpassed vividness. But both by his clearness of vision and by the lucidity, the purity, and the masculine directness of his style he was a classic; and this, as we have already said, is the case of all true Realists such as Defoe and Lesage.

The Realistic school did not fail to produce in its turn a reaction and a revolt against its conventions. Authors who have since attained to the fulness of their powers, such as MM. Brunetière, Lemaître, Bourget, and Anatole France, protested against the conventions of the Realistic school and strove to counteract its influence. It is this counter-movement which has continued up to the present day. Another important factor in the origin of the new phase has been the influence of foreign literatures. The novels of George Eliot, Tolstoi, and Tourgeneff exercised a wide influence in France, and helped to reveal the limited range of the French Naturalist school; for in these foreign novels Nature was depicted in her entirety and not only in her baser aspects. At the same time a revolt arose against the aridity of the Realists, against their inability to look beyond the objects and facts within their immediate ken, and their total elimination of the life of the soul and the region of ideas. This tendency gave birth to a renascence of idealism. In 1889 M. Bourget wrote in the preface to his novel *Le Disciple*, after quoting Littré's well-known saying respecting the ocean of the unknown and the comparatively infinitesimal results of science: "A ceux qui te diront que derrière cet océan il y a le vide, l'abîme du noir et de la mort, aie le courage de répondre, vous ne le savez pas. Et puisque tu sais, puisque tu éprouves qu'une âme est en toi, travaille à ce que cette âme ne meure pas en toi avant toi-même." The younger generation turned once more to the region of ideas, and the tendency of French literature from 1889 up to the present day has been termed Idealist. Again, just as M. Taine's theories were adopted in a distorted form by the Naturalistic school, the philosophy of M. Renan was an important factor in the origin of the new tendency. But since no movement ever stops halfway, but continues naturally until it reaches its extreme limit, this tendency went farther than M. Renan's idealism, and passed on into mysticism; though this movement, as we look at it now, seems to be split up into singularly various elements, for together with the existence of symbolism and mysticism, incredulity and sensualism have survived, and a brutally cynical element has appeared which has been christened "*rosserie*." Doubtless it may be argued that the idealism of the new generation is skin-deep, that it is mystical without being Christian; it is at the same time probable that when we can look back upon the present period from a standpoint which will enable us to see it in its true perspective and proportion, the whole movement will seem to have been fairly named idealistic. . . . .

The above is hardly an eighty-ninth part of the space devoted to French Literature in the *Encyclopædia Britannica*. We have seen a specimen of the work of the Hon. Maurice Baring and Mr. J. E. C. Bodley in the above summary. It is not possible within the limits of this pamphlet to do more than enumerate a few of the interesting literary topics reviewed by Mr Saintsbury in the *Encyclopædia Britannica*. There we shall find accounts of the earliest French epics, of those Arthurian Romances which the later treatments of Mallory and Tennyson have made familiar to the least as well as to the most learned of Englishmen, of the

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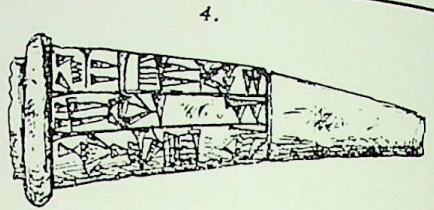
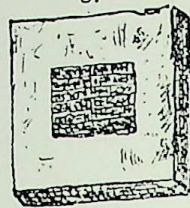
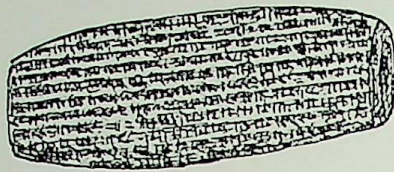
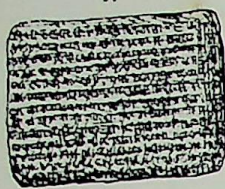
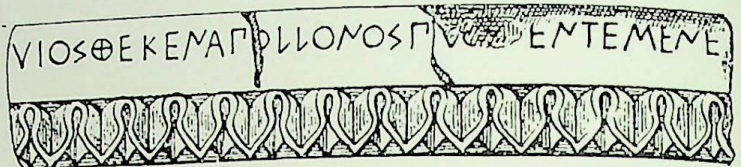
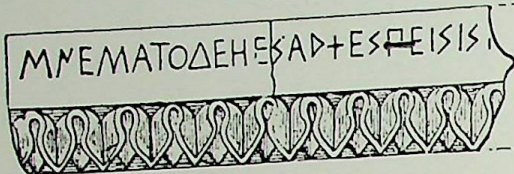
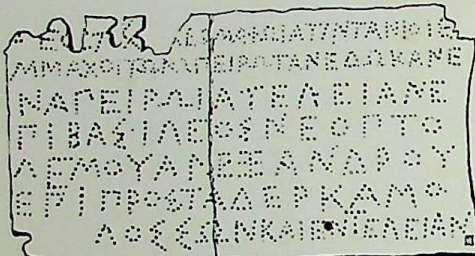
This Plate is from the 20-page Article **INSCRIPTIONS** by E. Hübner, Ph.D., Professor of Classical Philology, Berlin.

1-4. CUNEIFORM INSCRIPTIONS ON CLAY.

5. PISISTRATUS INSCRIPTION ON MARBLE. FROM ATHENS.

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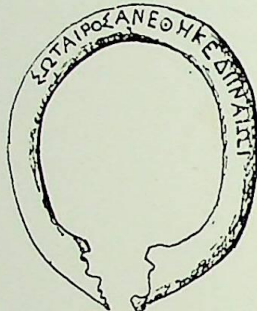
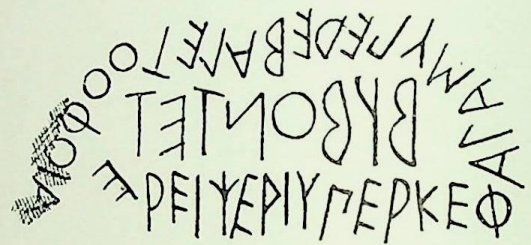
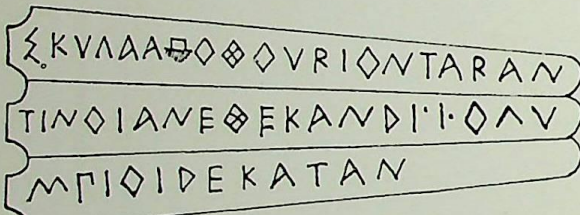
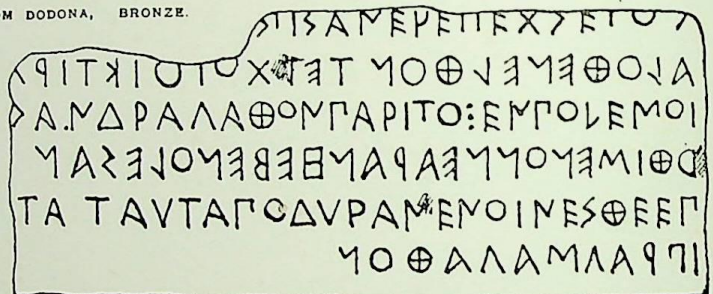
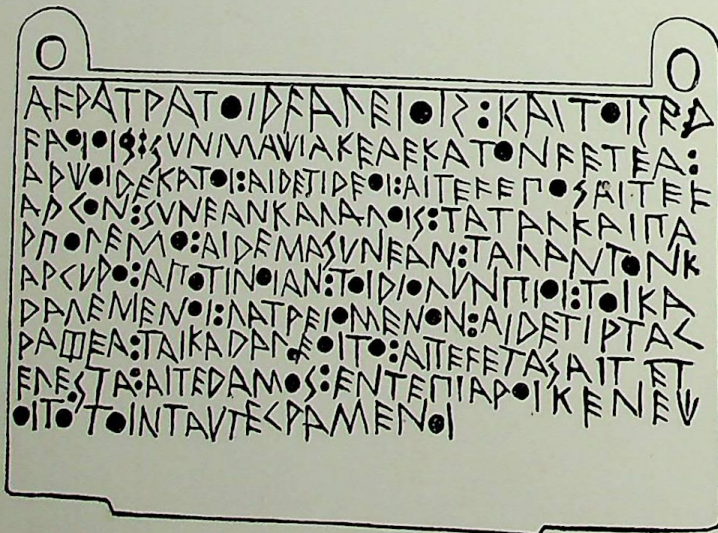

7. INSCRIPTION FROM DODONA, BRONZE.

8. ARCHAIC INSCRIPTION ON BROWN SANDSTONE, FROM OLYMPIA.

9. INSCRIPTION ON BRONZE SPEAR HEAD FROM OLYMPIA.

10. BOUSTROPHEDON INSCRIPTION ON BASE AT ATHENS.

11. TREATY BETWEEN ELIS AND HERÆA ON BRONZE TABLET, FOUND AT OLYMPIA IN 1813.

12. ARCHAIC INSCRIPTION ON BASE AT ATHENS.

C·PVMIDIVS·DIPILVS·HEIC·FVIT
A·D·V·NONAS·OCTUBREIS·M·LEPID·Q·CATVLCVS
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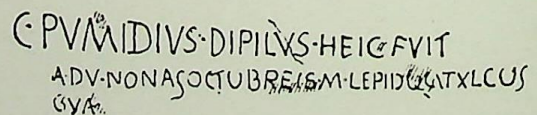
13. LATIN INSCRIPTION, FROM POMPEII.

CORNELIO·L·F·SCIPIO
AIDILES·COSOL·CESOR

14. LATIN INSCRIPTION.

NON·SVM·MENDACIS·QVAS
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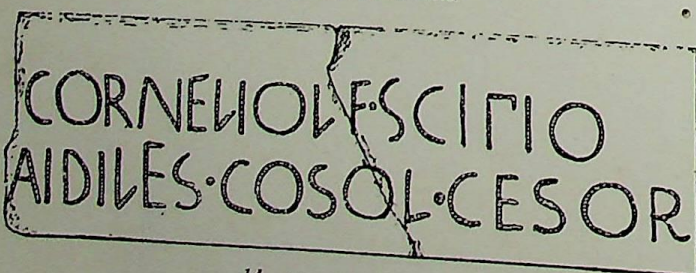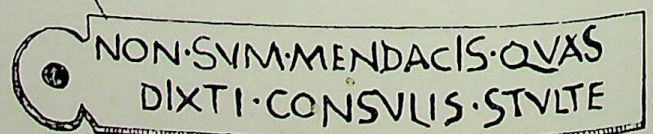
15. LATIN INSCRIPTION, TESSERA.

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Those interested in the subject of Inscriptions should read the Articles EGYPTOLOGY by Professor Flinders Petrie and PALÆOGRAPHY by Sir E. Maunde Thompson

Troubadours and of the Romans d'Aventures which begin in the 13th century and continue until the prose form of fiction acquires final precedence. The Fabliaux, the Satirical Didactic works, and that flower of the Middle Ages the Romance of the Rose, are all competently dealt with in this exhaustive article. Early drama, Prose History, 16th century Theologians; the Fiction, Prose, History, Philosophy, Theology, and Morals of the 17th century are all ingeniously and adequately epitomised. If we would see all that the literature of France meant for us in the 18th century, it is to the article of Mr Saintsbury besides the biographies of the literary giants in France of that epoch that we shall turn. To increase our understanding of Scott and the English Romantics, we shall refer to the narrative of the Romantic Movement in France, in which the figures of Victor Hugo, Baudelaire, and Balzac still shine with a lustre which Time has mellowed but not dimmed. Mr Saintsbury's summary of the product of eight centuries of French literature is not the least diverting portion of an article to which the reader must himself go if he would measure it in all the wideness of its application and all the minuteness of its illustrations.

A RUSSIAN MASTER-WRITER

From the Article on

Tolstoy, Leo.— . . . . . . The terrible famine of 1891–92 added fresh lustre to Tolstoy's name. He and his family worked unceasingly in soup-kitchens and barns, distributing food and clothes. No true leader lacks a following. Every oppressed sect or individual turned instinctively to Tolstoy for sympathy and support, the most important case in point being that of the sect of the Doukhobors. Early in 1891 rumours began to reach headquarters of social and religious excitement fermenting among the inhabitants of the Caucasus, and especially among the Doukhobors (*q.v.*). This people, numbering from fifteen to sixteen thousand, shared their goods and property in common, and made laws of conduct for themselves, based on a simple form of religion unobscured by ceremonies or ritual. In these matters, and especially in refusing to serve as soldiers, they defied the governors of the Caucasian provinces, so that as their numbers and strength of opposition to authority grew formidable, severe measures were put in practice for their suppression. Several of their leaders were exiled, and in 1895 some hundred of them were condemned to be enrolled for three years in the so-called "disciplinary regiment." It was in that year that Tolstoy came in contact with them personally, and became deeply interested in them. He promptly identified himself with the agitation in their favour, and by his endeavours aroused sympathy for them in other countries, especially in England, where the Quakers, with whom they have much in common, espoused their cause. After many rebuffs from the Government, and many unavailing efforts to reach the kindly ear of the Tsar, the persecution of the Doukhobors at length ceased, and they were allowed to emigrate. With the aid of the Quakers and other sympathizers, sufficient funds were collected and a remarkable exodus began. No less than 7500 persons left Russia for Canada. It was in aid of these people that Tolstoy wrote and published *Resurrection*. The attack on the Orthodox Church in this novel was probably the chief cause which led to his formal excommunication by decree dated 22nd February 1901.

The Doukhobors.

His religious views are best given in his own words: "I believe in God, whom I understand to be a Spirit, to be Love itself and the Beginning of all things. I believe that the interpretation of the will of God is most clearly and most comprehensively given in the teachings of the man Christ. But I consider it the greatest blasphemy to think of Christ as God and to worship Him as such. I consider that the true happiness of man consists in fulfilling the will of God, which is that we should love each other, and act towards others as we would they should act towards us. I believe there is but one means by which to nourish the growth of love—Prayer, not public prayer in churches, which is expressly forbidden by Christ (Matt. vi. 5–13), but private prayer, an example of which is given by Christ Himself."

Tolstoy's religion.

Before attempting to define the powers and position of an author, it is best to pass in view the works which have led to his present reputation. Tolstoy the writer is a guide of unusual faithfulness to Tolstoy the man. The gradual evolution of the reformer and preacher out of the brilliant novelist is described in no pages so clearly as in his own. *Childhood* (1852), *Boyhood* (1854), and *Youth* (1855–57)—Tolstoy's first literary efforts—may be regarded as semi-autobiographical studies; if not in detail, at least in the wider sense that all his books contain pictures, more or less accurate, of himself and his own experiences. No plot runs through them; they simply analyse and describe with extraordinary minuteness the feelings of a nervous and morbid boy, a male Marie Bashkirtseff . . . . Of the state of mind which Tolstoy calls "nihilism" for want of a better term he gives a faithful picture. This "nihilism" is a desperate, and yet at times merely dreamy, groping for something to satisfy the soul; a fatalistic inertia alternating with spasms of feverish activity.

Tolstoy as a writer.

The following quotation from the *Confession* shows the tangle into which these gropings occasionally led: "All that men sincerely believe in must be true: it may be differently expressed, but it cannot be a lie; and consequently, if it seems to me a lie, that must be because I do not understand it." We can but recall what Goethe said of the fate of the Romantics: "Am wiederkäuen sittlicher und religiöser Absurditäten zu ersticken." But in the interim between *Youth* and *My Confession*, a succession of brilliant performances had placed Tolstoy in the front rank of the novelists of the century. *The Cossacks* (1863), written round the theory that culture is an enemy to happiness, was followed by *War and Peace* (1864–69), which has been justly called a Russian epic. . .

A long period of silence followed the publication of this novel, during which the world heard little of him. At length in 1873 he issued the first parts of *Anna Karenina*. It is without doubt his greatest production. The area of time and space in it, as in the preceding book, is large, but it has more continuity of action, and the principal characters are kept well in the foreground. It is a study of modern Russian life, in which the normal passivity of unsympathetic conjugal relations is sharply contrasted with the transient omnipotence of passion and deep love. . . . .

"Anna Karenina."

The *Kreutzer Sonata*, published in 1890, created a profound impression. Many who were previously unacquainted with Tolstoy's work read this story of love, jealousy, and revenge, and were dumbfounded by its boldness. It is a startling advance upon *Family Happiness*, published thirty years earlier. Society generally, and Russian society in particular, is ruthlessly condemned for its views on marriage and its attitude towards the vexed question of the relations between man and woman. It is also a stern indictment of music as a debasing art. Marriage, Tolstoy says, can only be condoned if spiritual sympathy exists, and then only as the means to the continuance of the race; otherwise it is a breach of true morality. The "motive" of the *Sonata* is that the ideal we should strive after is a life where the spiritual penetrates and pervades everything, and where all that is carnal is eliminated. . . . .

"Kreutzer Sonata."

[*The Article* RUSSIAN LITERATURE *should be consulted on* GOGOL, HERTZEN, TURGUENEV, PUSHKIN, LERMONTOFF, NEKRASOFF, *&c.*]

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THE PROPHET OF THREE HUNDRED MILLION PEOPLE.

From the Article (46 pages) by R. K. DOUGLAS, *Professor of Chinese, King's College, London.*

China.— . . . . . . We have dwelt at some length on the classics, because, since they are the sacred books of China, it is natural to suppose that in them we may find the mainspring of the national literature. Unfortunately, to some extent this is the case, and Confucius has much to answer for, both as regards his teaching and the literary model he bequeathed to his countrymen. Instead of encouraging his disciples to think for themselves, to look into their own hearts, and to acquire that personal knowledge that enables a man to stand alone, he led them out both by precept and example into the dreary waste of cold formalism, in which all individuality is lost, and all force and originality of thinking is crushed out. It may be said that, as far as his teachings were concerned, he strove to suit his system to the capacity of his audience; and that he was successful in so doing is proved by the fact that for twenty-two centuries his name has been revered and his precepts have been followed by his countrymen of whatever rank and station in life.

Doctrine and style of Confucius.

As has been well observed by Wells Williams, "If Confucius had transmitted to posterity such works as the *Iliad*, the *De Officiis*, or the *Dialogues of Plato*, he would no doubt have taken a higher rank among the commanding intellects of the world. . . . . The variety and minuteness of his instructions for the nurture and education of children, the stress he lays upon filial duty, the detail of etiquette and conduct he gives for the intercourse of all classes and ranks in society, characterize his writings from those of all philosophers in other countries, who, comparatively speaking, gave small thought to the education of the young. The *Four Books* and the *Five Classics* would not, as far as regards their intrinsic character in comparison with other productions, be considered anything more than curiosities in literature, for their antiquity and language, were it not for the incomparable influence they have exerted over so many millions of minds." . . . .

[*See also* CELTIC LITERATURE, GREEK LITERATURE, ROMAN LITERATURE, *&c.*]

A LIBRARY OF BRICK BOOKS.

From the Article (11 pages) by Rev. A. H. SAYCE, M.A., *Deputy Professor of Comparative Philology, University of Oxford.*

Babylonia.— . . . . . The larger part of the literature was in clay, stamped in minute characters upon baked bricks, laterculæ, coctiles as Pliny calls them, but papyrus was also used, though none of this fragile material has been preserved to our day. In fact, the use of papyrus seems to have preceded that of clay, which was not employed until after the settlement of the Acadians in the plains. The clay tablets or books were arranged in order; and we learn from the catalogue of Sargon's library at Agane (about 2000 B.C.) that each was numbered, so that the student had only to write down the number of the tablet he wanted and the librarian thereupon handed it to him. . . . .

[*The history of the medium through which the thought of all ages has been preserved is illustrated with a great variety of diagrams, in the articles* PALÆOGRAPHY, WRITING, EGYPTOLOGY, *and* HIEROGLYPHICS. *Even the invention of Wireless Telegraphy is not more wonderful than that of symbols to serve as coins for the interchange of thought.*]

THE LITERATURE OF SPAIN.

From the Articles (17 pages) by ALFRED MOREL-FATIO *and* JAMES FITZMAURICE KELLY.

Spain.— . . . . . . The golden age of Spanish literature, as it is called, belongs to the 16th and the 17th centuries, extending approximately from 1550 to 1650. Previous to the reign of the Catholic sovereigns there exists, strictly speaking, only a Castilian literature, not very self-reliant, and largely influenced by imitation first of France and then of Italy; the union of the two crowns of Aragon and Castile, and afterwards the advent of the house of Austria and the king of Spain's election as emperor, proved the creation at once of the political unity of Spain and of Spanish literature. After the death of Philip IV. (1665) this fair-shining light went out; the nation, exhausted by distant expeditions, the colonization of America, Continental wars, and bad administration, produced nothing; its literary genius sank in the general decline, and Spain is destined ere long to be subjected again to the influence of France, to which she had submitted during all the first period of the Middle Ages. In the 16th and 17th centuries the literature is eminently national. Of course all is not equally original, and in certain kinds of literature the Spaniards continue to seek models abroad.

Classic age—16th and 17th centuries.

. . . .

The departments of imaginative literature in which the genius of the new Spanish nation revealed itself with most vigour and originality are the *novela* and the drama. By *novela* must be understood the novel of manners, called *picaresca* (from *picaro*, a rogue or "picaroon") because of the social status of the heroes of those fictions; and this kind of novel is quite an invention of the Spaniards. . . . .

Romances.

. . . .

Don Quixote, the masterpiece of Miguel Cervantes de Saavedra (1547–1616), is too great a work to be treated along with others; and, besides, it does not fall strictly within the limits of any of the classes just mentioned. If it has to be defined, it may be described as the social romance of 16th and 17th century Spain. Cervantes undoubtedly owed much to his predecessors, notably to the picaresque romancers, but he considerably enlarged the scope of the type, and, what had as yet been done by no one, supported the framework of the story by a lofty moral idea. His main purpose was, as we are beginning to realize, not to turn into ridicule the books of chivalry, which were already out of fashion by his time, but to show by an example pushed to absurdity the danger of *hidalgism*, of all those deplorable prejudices of pure blood and noble race with which three-fourths of the nation were imbued, and which, by the scorn of all useful labour which they involved, were destined to bring Spain to ruin. The lesson is all the more effective as his *hidalgo*, although ridiculous, was not put beyond the pale of the reader's sympathy, and the author condemns only the exaggeration of the chivalrous spirit, and not true courage and devotion, when these virtues have a serious object. The same thing happened to *Don Quixote* which had happened to *Guzman de Alfarache*. After the publication of the first part (1605), Cervantes allowed his pen to lie too long idle; and so it occurred to some one to anticipate him in the glory of completing the story of the heroic deeds of the knight of La Mancha. In 1614 a second part of the adventures of Don Quixote made its appearance—the work of a certain Avellaneda, a pseudonym under which people have sought to recognize the inquisitor Luis de Aliaga. . . . .

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. . . . . And, when romanticism begins to find its way into Spain and to enter into conflict with the spirit and habits of the 18th century, it is still to France that the poets and prose writers of the new school turn, much more than either to England or to Germany. The first decidedly romantic poet of the generation which flourished about 1830 was the duke of Rivas, Angel de Saavedra (1791–1856); no one succeeded better in reconciling the genius of Spain and the tendencies of modern poetry; his epic poem *El Moro Espósito* and his drama of *Don Alvaro ó la Fuerza del Sino* belong as much to the old romances and old theatre of Spain as to the romantic spirit of 1830.

. . . .

If the struggle between classicists and romanticists continued even after 1830, and continued to divide the literary world into two opposing camps, it is plain that the new generation—that which occupied the scene from 1840 till about 1868—had other preoccupations. The triumph of the new ideas is now assured; only a few reactionaries are still seen to cling to the principles bequeathed by the 18th century. What was now being aimed at was the creation of a new literature which should be truly national and no longer a mere echo of that beyond the Pyrenees. . . . .

. . . .

. . . . . . The latest leader of the naturalistic school in Spain is Armando Palacio Valdés (b. 1853), whose precise vision of the visible world and whose faculty of artistic selection were first shown in his novel *El Señorito Octavio.* The surprising advance made in *Marta y María* and in *La Hermana San Sulpicio*, where the characters are seen, observed, understood, and rendered with unflinching fidelity, raised hopes that, in Palacio Valdés, Spain has discovered a novelist of the first order to succeed Pereda and Valera; but in *La Espuma* and in *La Fe* . . . the author followed the French lead too closely, and almost ceased to be national without becoming cosmopolitan. His latest work, *La Alegría del Capitán Ribot* (1899), shows that Palacio Valdés has recognized his danger. . . . Another novelist who for a time almost divided honours with Palacio Valdés as a naturalistic writer, is the Señora Quiroga (b. 1851) who published under her maiden name of Emilia Pardo Bazán. Her great energy, courage, and versatility have led her to found a journal of literary criticism which she calls the *Nuevo teatro crítico* in memory of her countryman, the Galician Feijóo. Here she undertakes single-handed to review the literature of Europe, and, sitting constantly at the receipt of custom, she is naturally familiar with the main currents of literary developments. But she was a novelist long before she became a critic, and her *Pascual López*, the autobiography of a student of medicine, is a simple tale which might have been written thirty years earlier, and gives no hint of the constructive power, the outspoken reality of *Los Pazos de Ulloa*, nor of the emphatic animalism of *La Madre Naturaleza*. The strong, frank, repellent pictures of country people abandoning themselves to their primitive instincts are set off by very graphic descriptions of landscape; but the censures passed upon the painful theme of *La Madre Naturaleza* may have alarmed the writer, and induced her to choose a less objectionable subject in *Una cristiana*. . . . . . .

. . . .

. . . . . Literary criticism in Spain is too often inspired by intolerant party spirit which judges authors according to their political labels, and, as most Spaniards are party men, the result is extremely depressing. Antonio Valbuena, a humorist of great gifts, finds it difficult to do justice to any writer who is an academician, an American, or a Liberal; Leopoldo Alas was scarcely less severe in criticizing reactionaries, but his intention was always good, and his wide culture and insight were of inestimable worth. Emilia Pardo Bazán is encyclopædic, and resents any departure from the literary standards of Castelar to which she professes, though she does not practise, an adherence. Pascual de Gayangos y Arce (d. 1897) and Manuel Milá y Fontanals (d. 1884) escaped from these petty quarrellings by confining themselves to the historical criticism of the literature of the past; and Marcelino Menéndez y Pelayo (b. 1858) has gained a European reputation in the same province. He has passed from the narrow view of *La Ciencia Española* to the luminous catholic tolerance which is expressed in his *Historia de las ideas estéticas en España*, a work which is still unfinished, though its first volume appeared many years ago. Ramon Menéndez Pidal, a pupil of Menéndez y Pelayo, has already produced in *La Leyenda de los Infantes de Lara* a distinguished piece of reconstructive criticism which has extorted the admiration of eminent experts. . .

[*Comprehensive Articles on the Literatures of* ITALY, DENMARK, GERMANY, NORWAY, *&c., will be found under the headings of those countries in the Tenth Edition.*]

ENGLISH LITERATURE ACROSS THE ATLANTIC.

From the Article (*17 pages*) *by* JOHN NICHOL, LL.D., *Professor of English Language, University of Glasgow.*

American Literature. . . . . . . Now that the United States have reached their full majority, it is time that England should cease to assume the attitude of their guardian, and time that they should cease to be on the alert to resent the assumption. Foremost among the more attractive features of transatlantic literature is its *freshness.* The authority which is the guide of old nations constantly threatens to become tyrannical: they wear their traditions like a chain; and, in the canonisation of laws of taste, the creative powers are depressed. Even in England we write under fixed conditions; with the fear of critics before our eyes, we are all bound to cast our ideas into similar moulds, and the name of "free-thinker" has grown into a term of reproach. Bunyan's *Pilgrim's Progress* is perhaps the last English book written without a thought of being reviewed. There is a gain in the habit of self-restraint fostered by this state of things; but there is a loss in the consequent lack of spontaneity; and we may learn something from a literature which is ever ready for adventures. In America the love of uniformity gives place to impetuous impulses: the most extreme sentiments are made audible, the most noxious "have their day, and cease to be;" and truth being left to vindicate itself, the overthrow of error, though more gradual, may at last prove more complete. A New England poet can write with confidence of his country as the land

> "Where no one suffers loss or bleeds
> For thoughts that men call heresies."

Another feature of American literature is its *comprehensiveness:* what it has lost in depth it has gained in breadth. Addressing a vast audience, it appeals to universal sympathies. In the Northern States, where comparatively few have leisure to write well, almost every man, woman, and child can read and does read. . . . .

[*See also the lives of* THOREAU, EMERSON, HAWTHORNE, HAMILTON, LONGFELLOW, RUSSELL LOWELL, WALT WHITMAN, *in the Tenth Edition.*]

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To make a list of all the literary subjects treated in the *Encyclopædia Britannica* would be a dull and purposeless process. We all know that such a list would fill page after page, and it is only in the intelligent grouping of names that lists become suggestive or eloquent.

The poets have always seen this, and so Villon catalogued fair women in a matchless poem, and Homer catalogued ships for the wonder of posterity. Virgil and Dante were masters at the art of enumeration; so was Pindar; and no less Rabelais, "the greatest of French humourists, and one of the few great humourists of the world."

France is indeed rich in the masters of catalogue in verse; and Victor Hugo's *La Légende des Siècles* is a notable instance on a grand scale, of which, in his article, Mr. Swinburne says: "The pageant of history and of legend, marshalled and vivified by the will and the hand of the poet, ranges through an infinite variety of action and passion, of light and darkness, of terror and pity, of lyric rapture and of tragic triumph."

One of the most famous lists in literature is that in the Bible of the materials for the building of the Temple of Solomon. Another list less familiarly known to-day is the inventory of the contents of Grandison Hall in Samuel Richardson's *Sir Charles Grandison.*

The secret of the success attained by such men as these in their catalogues lies in the art of their display. Let us set a few of the literary subjects treated in the Tenth Edition side by side and leave the reader to guess the list as a whole from the eloquence of the fragment.

The Encyclopædia Britannica discusses English, American, French, German, Dutch, Danish, Scandinavian, Spanish, Italian, Roman, Greek, Turkish, Russian, Icelandic, Hindoo, Chinese, Japanese, Phœnician, Assyrian, Egyptian, and Hebrew Literatures.

The Article on

VILLON

is by GEORGE SAINTSBURY.

The Article on

HOMER

is by Dr. MONRO.

The Article on

VIRGIL

is by Dr. SELLAR.

The Article on

DANTE

is by OSCAR BROWNING.

The Article on

PINDAR

is by Sir RICHARD JEBB.

The Article on

RABELAIS

is by GEORGE SAINTSBURY.

The Article on

VICTOR HUGO

is by Mr. SWINBURNE.

The Article on

THE BIBLE

is by Prof. W. ROBERTSON SMITH, LL.D.

The Article on

RICHARDSON

is by Professor W. MINTO.

Not only the works of the great masters in literature, but also the conditions under which their masterpieces have been accomplished, are of the greatest interest to us. Thus it is instructive to take a few only of the men who worked under the stress of the greatest physical disabilities—whose genius has triumphed over disease:

GALILEO
MILTON
CHOPIN
HEINE
ROUSSEAU
CARLYLE
DARWIN
STEVENSON
KEATS

Separate Articles are devoted to each of the above names in the Tenth Edition.

While the articles on particular sections of the Literature of the World are too numerous for more than a few random instances to be quoted in this pamphlet, it must not be forgotten that the *Encyclopædia Britannica* has secured the highest authorities for subjects of general literary interest. Thus—

Dr. GARNETT writes on SATIRE

Prof. MAX MÜLLER on ARYAN

Dr. MURRAY on ENGLISH LANGUAGE

Mr. EDMUND GOSSE on ENGLISH LITERATURE

Prof. NÖLDEKE on SEMITIC LANGUAGES

Mrs. HUMPHRY WARD on LYLY

Sir WALTER BESANT on FROISSART

LORD SELBORNE on HYMNS

Sir CHAS. LYALL on HINDOO LITERATURE

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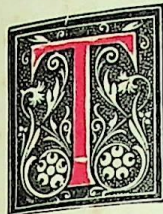
MUSIC

But to leave all declamatory speeches in praise of divine Musicke; I will confine my selfe to my proper subject: besides that excellent power it hath to expell many other diseases, it is a soveraigne against Despaire and Melancholy, and will drive away the divell himselfe.—BURTON.

HE significance of Music in the lives of men and women has probably always been of the same value, but the philosophical attitude of individual composers towards their art has varied in successive ages. The elevated serenity of a mass by Palestrina expresses a range of emotions narrower and possibly deeper than those reflected by a symphony of Beethoven. In the one the composer takes splendid refuge from life in the solemn glorification of a divine system. Life is the object of the other's quest; his Muse has come down from the Empyrean to seek inspiration in the paradoxes and burning antitheses of thought and aspiration which characterize a later civilization.

Just as Mr Kipling has presented the significance of modern science through the medium of fiction in many of his tales, so Tschaïkovsky and Richard Strauss have projected all the phenomena of modern life into their musical scores. As we listen to their work we become aware that this world of sound is a musical echo of modern conditions. Increased facilities of communication—the steam engine, the ocean liner, the motor car, and wireless telegraphy; Philosophy in the latest garb put upon her by Schopenhauer and Nietzsche; the fruits of psychical discovery—hypnotism and telepathy; the refinements of modern warfare—the Mauser bullet and the eight-mile gun: all these have equivalent expressions in the language of modern music.

Such truths as these might seem like exaggeration were they not corroborated by the evidence provided in the lives of composers like Hoffmann, Schumann, Berlioz, Wagner, and many others recorded in the Tenth Edition. In view of the extended application of music to all phases of thought and all the phenomena of life, the Encyclopædia Britannica, of which the musical sections may be regarded as a Dictionary of Music and Musicians, is a most valuable addition to any house in which the cultivation of music is an unwritten rule.

Questions concerning the history of some individual composer, or some individual work performed at a concert, are constantly being suggested in musical circles. Paderewski plays a nocturne by Chopin: our pleasure does not cease with the enchantment of the notes. We want to know when the composer wrote the work, in what frame of mind, and under stress of what conditions. Or, to take another instance, Kubelik plays "The Devil's Sonata"; someone in the audience remembers to have heard Paganini, and tells the story of how it was publicly believed that in his performance the violinist was assisted by the devil: thus through the actual performance of Tartini's masterpiece we are led to enquire into the life of the composer, into the merit of the performance as compared with that of a great predecessor, and possibly into the history of the instrument itself.

The Tenth Edition will be found to deal adequately with all enquiries of this kind, and the literary quality of its pages will be an additional incentive to the reader in the pursuit of knowledge. The following extracts are no more than a brief suggestion of the departments of music into which an exhaustive enquiry may be pursued.

INVENTION OF THE MODERN PIANO.

From the Article by Sir GEORGE H. MACFARREN, *Mus. Doc., late Professor of Music, University of Cambridge.*

Music.—Part I. History. . . . .
. . . .

Bach was a more assiduous student than either his predecessor or his contemporary who are here classed with him. It was later in life than they that he issued his earliest works, for his youthful renown was more as a player than as a producer. Having no theoretical instructor, he made searching study of all the music of earlier times and of his own. Whatever Bach learned of the principles of counterpoint from profounder musicians, he owed his views of plan or design in the structure of a composition to his familiarity with the concertos of Antonio Vivaldi and Tomaso Albinoni, both Venetian violinists who visited Germany, and he gained this familiarity by arranging for the organ many of the concertos for several instruments, as also much that the same authors wrote for a single violin. His arrangement consisted in adding parts to the original, which he kept intact, and so retained the plan while enriching the harmony. . . . . A class of oratorio of which Luther had planted the earliest germ, the recitation of the Divine Passion, had grown into extensive use in North Germany prior to the period of Bach, and to this belongs his largest if not most important work. This is his setting of the portion of St Matthew's Gospel which narrates the incidents, interspersed with reflective passages, some taken from the chorals of common use in the Lutheran and Calvinistic churches (the tunes proper to which have special harmonic treatment when here appropriated), and some set in the form of airs, duets, and choruses to verses written for the occasion. Bach set also St John's version of the Passion, and others. He wrote likewise for church use cantatas peculiar to every Sunday's requirement in the Lutheran service, and left five series of these, each for an entire year. He produced other sacred and many secular cantatas . . . . . . other pieces for the Roman Church, very much for the organ alone that has never been equalled in its intrinsic qualities or as a vehicle for executive display, many concertos and suites for the orchestra of the day, and a vast number of pieces for the harpsichord or clavecin. Among these last must be signalized *Das wohltemperirte Clavier* (1722), and a sequel to the same, *XXIV. Preludien und Fugen durch allen Tonarten, sowohl mit der grossen als kleinen Terz* (1740). These two distinct works are now commonly classed together as *Forty-eight Preludes and Fugues*. To describe their purpose reference must be made to the discrepancies between the tuning of intervals by 3rds, or by 8ths, or by 5ths. The B♯, which is reached by successive 3rds above C, has 250 vibrations in the same period that the C, which is reached by 8ths from the same starting note, has 256, and in the same period that the B♯, which is reached by 5ths from the original C, has 259 and a fraction. The same is true of every other musical sound as of C, namely,

Temperament.

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that tuning by 3rds, or 8ths, or 5ths, yields a different note from the other two. Hence it results that notes which are in tune in one key are out of tune in other keys, and consequently musical composition was of old limited to those very few keys that have several notes in common with the key of C. The organ Handel presented to the chapel of the Foundling Hospital, London, had the raised or black keys divided, with each half to act on pipes different from the other half, and thus gave different notes for C♯ and for D♭, and the like; and other organs of the period were similarly constructed. Bach's notion was so to temper the intonation that, while the tuning of no key should be perfect, the discrepancies should be divided so nicely between all keys that no one would be offensive to the hearer, and to illustrate this he wrote in his 38th year a series of pieces in every one of the keys in its major and minor form, calling it "The clavier with equal temperament." This bears on a supposition, once diffidently advanced and since confirmed . . . . that the ear receives tempered sounds as they should be, instead of as they are, perceiving a different effect from the note whose tonal surroundings prove it to be ♭G from that which is yielded by the same string on a pianoforte when it is required to represent ♯F. Such is the practical application in modern use of the term enharmonic with reference to keyed instruments when it means the giving different names to one note; on the voice, however, and on bowed instruments the smallest gradations of pitch are producible, and so all notes in all keys can be justly tuned, which, among others, is one reason for the exceptional delight given by music that is represented by either of these means. The enharmonic organ and harmonium of Mr Bosanquet are provided with a keyboard of a general nature in which the restriction to closed circles of 5ths is avoided. Systems reducible to series of 5ths of any character can therefore be placed on this keyboard. As the relative position of the keys determines the arrangement of the notes, the fingering is the same in all keys, and depends only on the intervals employed. The modern use of the word chromatic has already been stated, and it only remains to say of the other of the three Greek genera, diatonic, that the term now defines music consisting of notes according to the signature of the prevailing key. To return to Bach, his orchestration is completer than Handel's, though yet needing the addition of an organ part that he did not write, but his scores are liable to misrepresentation in modern performance because several of the instruments are obsolete for which they were designed; Bach's orchestral treatment differs from that of later days in having often a special selection of instruments for a single movement in a work, which are engaged throughout that piece with small variety of interchange, and likewise in having mostly the separate counterpoint for every instrument employed instead of combining instruments of different tone in one melody. . . . .

Enharmonics. **Diatonic.**

[*The subject of this extract should be further studied in the articles* BACH, HANDEL, *&c.*]

THE HISTORY OF STRINGED INSTRUMENTS.

From the Article by A. J. HIPKINS *of Broadwood's.*

Pianoforte.— . . . . The earliest known record of the clavichord occurs in some rules of the minnesingers, dated 1404, preserved at Vienna. The monochord is named with it, showing a differentiation of these instruments, and of them from the clavicymbalum, the keyed cymbal, cembalo (Italian), or psaltery. From this we learn that a keyboard had been thus early adapted to that favourite mediæval stringed instrument, the "cembalo" of Boccaccio, the "sautrie" of Chaucer. There were two forms of the psaltery: . . . .

Fig. 1.—Earliest existing representation of a Keyed Stringed Instrument from St Mary's, Shrewsbury (primitive Clavichord). Before 1460. Drawn by Miss Edith Lloyd.

[*The Tenth Edition also has Articles on* FLUTE, VIOLIN, OBOE, OPHICLEIDE, ORGAN, BASSOON, *&c.*]

THE LIMITS OF AUDIBLE SOUND.

From the Article (5 pages) by R. H. M. BOSANQUET, *Professor of Acoustics, Royal College of Music, London.*

Music.—Part II. Scientific Basis. . . . . . The complete range of audible musical sounds comprises about nine octaves. It extends from the 32-foot C, two octaves below the lowest note of a bass voice, to somewhere about three octaves above C in alt. The upper notes of this range are not audible to some persons. Organ-pipes are made having notes covering this whole range, except about the top half-octave. The position of notes is so frequently referred to the length of the corresponding organ-pipe that it is convenient here to give these lengths, with the usual notation for the notes to which they correspond. . .

Range of musical sounds.

Notation	Note	Name	Length
2 octaves above.	C^{vi}		$\frac{3}{4}$ inch.
8va.	C^{v}		$1\frac{1}{2}$ inches.
8va. or	C^{iv}	c in altissimo.	3 inches.
	C^{iii}	c in alt.	6 inches.
	C^{ii}	c treble.	1 foot.
	C	c middle.	2 feet.
	C	c tenor.	4 feet.
	C	Great c.	8 feet.
	,C or C̲		16 feet.
2 octaves below.	,,C or C̳		32 feet.

N.B.—The letter notation is continued from each C upwards through the octave, and changes at the next C above.

[*The Articles* ACOUSTICS, PITCH, *&c. in the Tenth Edition should be consulted in connexion with this Extract.*]

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OLD ENGLISH SONG.

From the Article

Glee.— . . . The accomplishments and social position of the gleeman seem to have been as varied as those of the Provençal "joglar." To return to the word "glee," there are early examples of its being used as synonymous with harmony or concerted music. The former explanation, for instance, is given in the *Promptorium Parvulorum*, a work of the 15th century. Glee in its present meaning signifies, broadly speaking, a piece of concerted vocal music, generally unaccompanied, and for male voices, though exceptions are found to the last two restrictions. The number of voices ought not to be less than three. As regards musical form, the glee is little distinguished from the catch,—the two terms being often used indiscriminately for the same song; but there is a distinct difference between it and the madrigal—one of the earliest forms of concerted music known in England. . . . .

[*The Article* VOICE *should be consulted in connexion with the different methods of singing.*]

A GREAT ENGLISH COMPOSER.

From the Article by W. S. ROCKSTRO.

Purcell.— . . . . . . Purcell, who had never been in Italy, confesses himself, in the preface to his sonatas, "unskilful in the Italian language," and could never by any chance have heard an Italian opera; but he knew very well what Italian music was, and had not neglected to study it deeply. Yet it is doubtful whether all Italy could at that moment have produced a work so full of inborn genius as *Dido and Æneas*. It is a musical drama in the strictest sense of the term, a genuine opera, in which the action is entirely carried on in recitative, without a word of spoken dialogue from beginning to end; and the music is of the most genial character—a veritable inspiration, overflowing with spontaneous melody, and in every respect immensely in advance of its age. It never found its way to the theatre, though it appears to have been very popular among private circles. It is believed to have been extensively copied, but one song only was printed by Purcell's widow in *Orpheus Britannicus*, and the complete work remained in manuscript until 1840, when it was printed by the Musical Antiquarian Society, under the editorship of Sir George Macfarren. There is a tradition that the part of Anna (erroneously called Belinda), written for an alto voice, was sung by the composer himself. Should this story be verified, it will tell strongly in favour of the opinion that Purcell really did compose *Dido and Æneas* at the age of seventeen, *i.e.*, in 1675; for it is certain that at the coronation of James II. he sang bass. . . . .

[*Those who forget England's contribution to the great catalogue of the world's musicians should read the Articles on* BYRD, TALLIS, ARNE, FIELD, BALFE, SULLIVAN.]

A MASTER SONG WRITER.

From the Article (2½ *pages*) *by* J. H. FULLER MAITLAND:

Brahms.— . . . . . . As with all creative artists of supreme rank, the work of Brahms took a considerable time before it was very generally appreciated, but the number of his admirers has been constantly increasing, and nowhere has his music found a warmer welcome than in England. The change in public opinion is strikingly illustrated in regard to the songs, which, once voted ineffective and unvocal, have now taken a place in every eminent singer's repertory. In the other branches of music in which he worked, the structure of the composition is of such enormous importance that its appreciation by the general mass of musical amateurs is of necessity slow . . . and while it is his wonderful power of handling the recognized classical forms, so as to make them seem absolutely new, which stamps him as the greatest musical architect since Beethoven, the necessity for realizing in some degree what musical form signifies has undoubtedly been a bar to the rapid acceptance of his greater works by the uneducated lovers of music. These are of course far more easily moved by effects of colour than by the subtler beauties of organic structure, and Brahms's attitude towards tone-colour was scarcely such as would endear him to the large number of musicians in whose view tone-colour is pre-eminent. . . . .

[SCHUMANN, FRANZ, PORPORA, MOZART, MENDELSSOHN, *are but a few of the master song-writers to whom special articles are given in the Tenth Edition.*]

ENGLISH BELL-RINGERS.

From the Article by the Rev. I. L. PAPILLON, M.A., *late Fellow of New College, Oxford.*

Campanology.— . . . . . . The art of scientific change-ringing, peculiar to England, does not seem to have been evolved before the middle of the 17th century. Societies or guilds of ringers, however, existed much earlier. A patent roll of 39 Henry III. (1255) confirms the "Brethren of the Guild of Westminster, who are appointed to ring the great bells there," in the enjoyment of the "privileges and free customs which they have enjoyed from the time of Edward the Confessor." In 1602 (as appears from a MS. in the library of All Souls' College, Oxford) was founded a society called the "Scholars of Cheapside." In 1637 began the "Ancient Society of College Youths," so called from their meeting to practise on the six bells at St Martin's, College Hill, a church destroyed in the Great Fire of London, 1666. At first only "rounds" and "call-changes" were rung, till about 1642, 120 "Bob Doubles" (§ 3) were achieved; but slow progress was made till 1677, when Fabian Stedman of Cambridge published his *Campanalogia*, dedicating it to this society, his method (§ 3) being first rung about this time by some of its members. Before the end of the 17th century was founded the "Society of London Scholars," the name of which was changed in 1746 to "Cumberland Youths" in compliment to the victor of Culloden. These two metropolitan societies still exist, and include in their membership most of the leading change-ringers of England: one of the oldest provincial societies being that at Saffron Walden in Essex, founded in 1623, and still holding an annual ringing festival. In the latter half of the 18th and first half of the 19th century change-ringing, which at first seems to have been an aristocratic pastime, degenerated in social repute. Church bells and their ringers, neglected by church authorities, became associated with the lower and least reputable phases of parochial life; and belfries were too often an adjunct to the pothouse. . . . .

History of Change-ringing.

[*"Shakespeare and the Musical Glasses" is a well-known phrase, but what are "the Musical Glasses"? See the Article* HARMONICA.]

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The article DUDEVANT, by Francis Storr, M.A., tells the interesting story of the life of Georges Sand.

THE GREATEST OF COMPOSERS FOR THE PIANO.

From the Article by FRANCIS HUEFFER, *Ph.D.*

Chopin.— . . . . . His connexion with Madame Dudevant, better known by her literary pseudonym of Georges Sand, is an important feature of Chopin's life. When in 1837 his health began to fail, Georges Sand went with him to Majorca, and it was mainly owing to her tender care that the composer recovered his health for a time. The last ten years of his life were a continual struggle with the pulmonary disease to which he succumbed October 17, 1849. The year before his death he visited England, where he was received with enthusiasm by his numerous admirers. A distinguished English amateur thus records his impressions of Chopin's style of pianoforte-playing compared with those of other masters. "His technical characteristics may be broadly indicated as negation of *bravura*, absolute perfection of finger-play, and of the *legatissimo* touch, on which no other pianist has ever so entirely leant, to the exclusion of that high relief and point which the modern German school, after the examples of Liszt and Thalberg, has so effectively developed. . . . .

[*Biographies of* RUBINSTEIN, LISZT, THALBERG, *and other masters are to be found in the Tenth Edition.*]

THE "ROMANTICS" IN MUSIC.

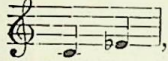
From the Article on

Schumann.— . . . . . This change of purpose led him to direct his attention to subjects connected with the higher branches of art which he had previously very much neglected. Moreover, it gave him time and opportunity for the development of a peculiar talent which he soon succeeded in turning to excellent account,—the talent for musical criticism. His first essays in this direction appeared in the form of contributions to the *Allgemeine musikalische Zeitung*; but in 1834 he started a journal of his own, entitled *Die Neue Zeitschrift für Musik*, and to this from time to time he contributed critiques of the most profound character, sometimes openly written under his own name, sometimes ostensibly emanating from an imaginary brotherhood called the *Davidsbund*, the members of which were living men and women, Schumann's most intimate friends, though the society itself existed only in his own fertile imagination. His time was now fully occupied. He composed with inexhaustible ardour, and by the exercise of his extraordinary critical faculty struck out for himself new paths, which he fearlessly trod without a thought of the reception his works were likely to meet with from the public. . . . . .

[*The Article on* TSCHAÏKOVSKY *in the Tenth Edition is an interesting study of a modern musical genius.*]

THE HISTORY OF THE OBOE.

From the Article by VICTOR MAHILLAN, *Conservatoire Royale de Musée, Brussels.*

Oboe.— . . . . The 17th century brought no great changes in the construction of the four smaller instruments of the family. Of much extended use in France, they were there called "haulx bois," or "haultbois," to distinguish them from the two larger instruments which were designated by the words "gors bois." Haultbois became hautbois in French, and oboe in English, German, and Italian; and this word is now used to distinguish the present smaller instrument of the family.

The little schalmey and tenor pommer seem to have disappeared in the 17th century; it is the discant schalmey

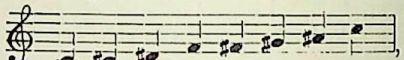



Fig. 4.

and the alto pommer which by improvement have become two important elements in modern instrumentation. The oboe, as such, was employed for the first time in 1671, in the orchestra of the Paris opera in *Pomone* by Cambert. The first two keys, [music notation], date from the end of the 17th century. In 1727 Gerhard Hoffmann of Rastenberg added the keys [music notation]. A Parisian maker, Delusse, furnished, at the end of the 18th century, much-appreciated improvements in the boring of the instrument. The *Méthode* of Sellner, published at Vienna in 1825, allows nine keys, [music notation], and one which, when opened, established a loop or ventral segment of vibration in the column of air, facilitating the production of sounds in the octave higher. Triebert of Paris owes his great reputation to the numerous improvements he introduced in the construction of the oboe. . . .

[*The Article* MUSIC *treats also of the history of musical instruments.*]

THE LAST GREAT COMPOSER OF OPERA.

From the Article by R. A. STREATFEILD.

Verdi, Giuseppe Fortunino Francesco (1813–1901), Italian composer, was born on 10th October 1813 at Le Roncole, a poor village near the city of Busseto. His parents kept a little inn, combined with a kind of village shop. Verdi received some instruction from the village organist, but his musical education really began with his entrance into the house of business of Antonio Barezzi, a merchant of Busseto. Barezzi was a thorough musician, and under his auspices Verdi was speedily introduced to such musical society as Busseto could boast. He studied under Giovanni Provesi, who was *maestro di cappella* of the cathedral and conductor of the municipal orchestra, for which Verdi wrote many marches and other instrumental pieces. These compositions are now the principal treasures of the library of Busseto. Among them is Verdi's first symphony, which was written at the age of fifteen and performed in 1828. In 1832 Verdi went to Milan to complete his studies. He was rejected by the authorities of the Conservatorio, but remained in Milan as a pupil of Vincenzo Lavigna.

For a brief extract from the article on MENZEL see p. 107 of this pamphlet.

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For a brief extract from the article on MENZEL see p. 107 of this pamphlet.

"A Concert of Frederick the Great." By Adolph Menzel.

(By permission of the Berlin Photographic Co.)

The Life of Frederick the Great in the Tenth Edition is a thrilling historical narrative

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Mr A. J. Hipkins writes the articles **HARP** and **LYRE** in the Tenth Edition.

"David singing before Saul." By Joseph Israëls.

(From a Photograph by Guy de Coral and Co., Amsterdam.)

The Articles BIBLE and BIBLICAL CHRONOLOGY in the Tenth Edition should be read by all Bible Students.

The Article on ISRAËLS in the Tenth Edition is one only of numerous biographical accounts of great painters past and present.

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with whom he worked until the death of Provesi in 1833 recalled him to Busseto. A clerical intrigue prevented him from succeeding his old master as cathedral organist, but he was appointed conductor of the municipal orchestra, and organist of the church of San Bartolomeo. After three years in Busseto, Verdi returned to Milan, where his first opera, *Oberto Conte di San Bonifacio*, was produced in 1839. His next work, a comic opera, known variously as *Un Giorno di Regno* and *Il Finto Stanislao*, was written in peculiarly distressing circumstances, the composer having had the misfortune to lose his wife and two children in the course of two months. *Un Giorno di Regno* was a complete failure, and Verdi, stung by disappointment, made up his mind to write no more for the stage. He kept his word for a year, but was then persuaded by Merelli, the impresario of La Scala, to look at a libretto by Solera. The poem took his fancy, in a short time the music was written, and in 1842 the production of *Nabucodonosor* placed Verdi in the front rank of living Italian composers. The success of *Nabucodonosor* was surpassed by that of its two successors, *I Lombardi* (1843) and *Ernani* (1844), the latter of which was the first of Verdi's operas to find its way to England. With *Ernani* Verdi became the most popular composer in Europe, and the incessant demands made upon him reacted upon his style. . . . .

. . . . . . In 1851 Verdi won one of the greatest triumphs of his career with *Rigoletto*, a triumph which was fully sustained by the production two years later of *Il Trovatore* and *La Traviata*. In these works Verdi reached the culminating point of what may be called his second manner. His development had been steady though gradual, and it is only necessary to compare the treatment of voice and orchestra in *Rigoletto* with that in *Ernani* to realize how quickly his talent had developed during these seven years. The popularity of *Rigoletto*, *Il Trovatore*, and *La Traviata* was enormous, and consolidated Verdi's fame outside the frontiers of Italy. . . . . .

. . . . . . In *Aida*, an opera upon an Egyptian subject, written in response to an invitation from Ismail Pasha, and produced at Cairo in 1871, Verdi entered upon the third period of his career. In this work he broke definitely with the operatic tradition which he had inherited from Donizetti, in favour of a method of utterance, which, though perhaps affected in some degree by the influence of Wagner, still retains the main characteristics of Italian music. In *Aida* the treatment of the orchestra is throughout masterly, and shows a richness of resource which those who knew only Verdi's earlier works scarcely suspected him of possessing; nevertheless, the human voice was still the centre of Verdi's system. Verdi kept thoroughly abreast of modern musical development, but his artistic sense prevented him from falling into the excesses of the German school. In the *Requiem*, which was written in 1874 to commemorate the death of Manzoni, Verdi applied his newly-found system to sacred music. His *Requiem* was bitterly assailed by pedants and purists, partly on the ground of its defiance of obsolete rules of musical grammar and partly because of its theatrical treatment of sacred subjects, but by saner and more sympathetic critics, of whom Brahms was not the least enthusiastic, it has been accepted as a work of genius. . . . .

The venerable composer died at Milan on 27th January 1901.

The following is a complete list of Verdi's operas, with the dates and places of production: *Oberto* (Milan, 1839); *Un Giorno di Regno* (Milan, 1840); *Nabucodonosor* (Milan, 1842); *I Lombardi* (Milan, 1843); *Ernani* (Venice, 1844); *I Due Foscari* (Rome, 1844); *Giovanna d'Arco* (Milan, 1845); *Alzira* (Naples, 1845); *Attila* (Venice, 1846); *Macbeth* (Florence, 1847); *I Masnadieri* (London, 1847); *Il Corsaro* (Trieste, 1848); *La Battaglia di Legnano* (Rome, 1849); *Luisa Miller* (Naples, 1849); *Stiffelio* (Trieste, 1850); *Rigoletto* (Venice, 1851); *Il Trovatore* (Rome, 1853); *La Traviata* (Venice, 1853); *Les Vêpres Siciliennes* (Paris, 1855); *Simon Boccanegra* (Venice, 1857: revised version, Milan, 1881); *Aroldo* [a revised version of *Stiffelio*] (Rimini, 1857); *Un Ballo in Maschera* (Rome, 1859); *La Forza del Destino* (St Petersburg, 1862); *Don Carlos* (Paris, 1867); *Aida* (Cairo, 1871); *Otello* (Milan, 1887); *Falstaff* (Milan, 1893). (R. A. S.)

[*The Tenth Edition contains Articles on* DONIZETTI, ROSSINI, SCARLATTI, *and numerous other masters of Italian music.*]

A BYRON IN MUSIC.

From the Article by FRANCIS HUEFFER, *Ph.D., Author of "Musical Studies."*

Berlioz.— . . . . . . About this period Berlioz saw for the first time on the stage the talented Irish actress Miss Smithson, who was then charming Paris by her impersonations of Ophelia, Juliet, and other Shakespearean characters. The young enthusiastic composer became deeply enamoured of her at first sight, and tried, for a long time in vain, to gain the responsive love or even the attention of his idol. To an incident of this wild and persevering courtship Berlioz's first symphonic work, *Episode de la Vie d'un Artiste*, owes its origin. It describes the dreams of an artist who, under the influence of opium, imagines that he has killed his mistress, and in his vision witnesses his own execution. It is replete with the spirit of contemporary French romanticism and of self-destructive Byronic despair. A written programme is added to each of the five movements to expound the imaginative material on which the music is founded. By the advice of his friends Berlioz once more entered the Conservatoire, where, after several unsuccessful attempts, his cantata *Sardanapalus* (1830) gained him the first prize for foreign travel, in spite of the strong personal antagonism of one of the umpires. During a stay in Italy Berlioz composed an overture to *King Lear*, and *Le Retour à la Vie*,—a sort of symphony, with intervening poetical declamation between the single movements, called by the composer a melologue, and written in continuation of the *Episode de la Vie d'un Artiste*, along with which work it was performed at the Paris Conservatoire in 1832. Paganini on that occasion spoke to Berlioz the memorable words: "Vous commencez par où les autres ont fini." Miss Smithson, who also was present on the occasion, soon afterwards consented to become the wife of her ardent lover. . . . . .

[*The history of Music in France is told in the Articles by* SIR GEO. MACFARREN *and* J. H. FULLER MAITLAND.]

As will have been seen from the above quotations, the *Encyclopædia Britannica* provides a valuable companion both to the performer and the amateur of music. There is no more consensus among musical than among dramatic critics as to the value of a new composition or the merits of a new play, and the best things about concerts are frequently said in private houses. It would seem almost as if the truth in such matters was too shy to brave the light of publicity. With the aid of the *Encyclopædia Britannica* a man can improve judgment, and satisfy his historical curiosity as to the lives of the masters, the performance of whose works enriches daily life with the memory of past achievements and a sense of the imperishable nature of all art.

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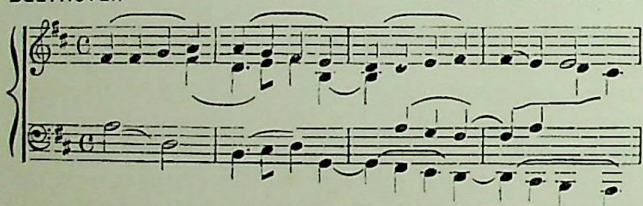
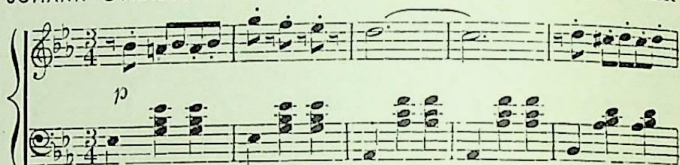
SACRED MUSIC

THE above melody is but one of those which form a musical Bible to the lovers of religious music. Oratorio has always found a congenial home in England. The articles **HANDEL, HAYDN, MENDELSSOHN, BACH,** in the Tenth Edition of the *Encyclopædia Britannica* at once suggest an immense literature concerning the history of these composers and the quality of their work, a knowledge of which cannot be epitomized in a line but must be sought in the pages of the Thirty-five Volumes themselves.

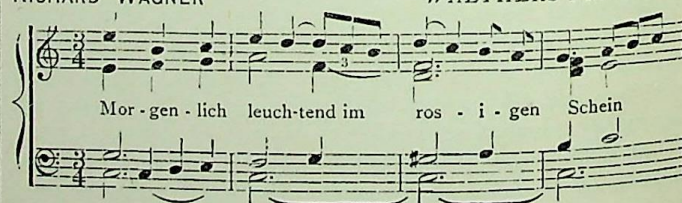
Nothing that has ever been written of Music has adequately expressed what it has meant to mankind; but men will ever continue to write of Music, and those whom Music has enchanted will never stop enquiring into the nature of this art, whether through the medium of analysis, psychological criticism, or panegyric.

ORCHESTRAL MUSIC

To think of the symphonies alone, each of which may be regarded as a bright star in the musical firmament, is to conjure up the names of **BEETHOVEN, MOZART, HAYDN, LISZT, TSCHAÏKOVSKY, JOHANNES BRAHMS,** and a great many more to whom separate articles have been devoted in the Tenth Edition. In the article MUSIC, by Sir George Macfarren, the reader will find a mass of information on this form of music which must heighten his appreciation of works like The Pastoral Symphony, the Symphonie Pathétique, the Jupiter Symphony, The Toy Symphony, and all the Symphonic Poems which so richly illustrate the phenomena of the modern world.

DANCE MUSIC

***T**HAT dance music is no mere reflexion of a mood of folly is well understood by men of genius. Has not Brahms himself said of "The Blue Danube," the most famous waltz, perhaps, of the last century, that he wished he had been the composer of it? The articles GUNG'L, STRAUSS, and many others in the Tenth Edition of the Encyclopædia Britannica will give the reader a happy start into this attractive region of musical research. Who can see the subjoined quotation without wanting to know something of the composer?*

OPERATIC MUSIC

No one can see the initial notes of the Preislied quoted below without his mind being instantly clothed in a mist of golden reminiscence. The glowing scenes of the Meistersinger will float into his imagination; once again he will say, "In this modern opera alone has the romance of the Middle Ages been touched into an insistent reality for an audience of four hundred years later by the wand of a master musician."

Every one has his favourite opera, and whether he wishes to turn to **DONIZETTI, ROSSINI, MOZART, WEBER, GOUNOD, GLUCK, MEYERBEER, OFFENBACH,** or **SULLIVAN** he will be fully rewarded in the pages of the Tenth Edition of the *Encyclopædia Britannica* with brilliant narrative and criticism.

PIANO MUSIC

NO instrument has proved its value as a popular medium for music so incontestably as the piano, and the mass of piano music is probably far in excess of that which has crystallized other forms into permanence. In the article on the PIANOFORTE, by Mr A. J. Hipkins, will be found the most complete and accurate history of this instrument by an unimpeachable authority. Articles also on DRUM, FLUTE, BASSOON, LYRE, HARP, MANDOLIN, VIOLIN, OBOE, CLARIONET, TRUMPET, ORGAN, and many others are to be found throughout the Thirty-five Volumes of the *Encyclopædia Britannica.*

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What the *Encyclopædia Britannica* Can Do for You

IT has been proved again and again that a man, even after he has reached maturity, is subject to changes so great as to be equivalent to an effectual change of his identity. One night in an African swamp, followed by a week's sharp fever, and a cheery young soldier, stout of heart and limb, becomes a morose invalid, grey-haired, and wrinkled, vague of sight and hearing—an altogether different man. A year's active life in a bracing climate, and a fat, wheezing, middle-aged man, indolent and joyless, becomes brisk, young, and happy.

The magicians never claimed the power of working greater changes than we may work upon ourselves. The only difference is that the magicians promised a spell of instant effect, while we seem compelled to work our wonders by patient and continued effort. Yet some among the beneficent influences whose aid we may invoke seem to have the power of operating not only without active effort on our part, but almost without our knowledge. Just as a few nights' sleep in the air of the pine-clad hills acts upon the body, so certain surroundings and circumstances act upon the mind. It is no more true that man is the creature of his environment than it is that man may control the environment which in turn controls his character.

The habit of asking questions and of satisfying instead of dismissing doubts will grow upon any man who so arranges his environment that his mind is stimulated to ask questions by the assurance that they will not remain unanswered. It is by satisfying the inquiries that arise in our minds that we gain knowledge. In one among his most recent stanzas, Mr Kipling touches upon this truth with his accustomed freshness of expression :—

> " I keep six honest serving men,
> They taught me all I knew ;
> Their names are What and Why and When,
> And How and Where and Who."

Soon after the King's Coronation a weekly paper told the story of a Scotch schoolmaster who was asked how he would like to be a king, and who replied that, although the pomps and ceremonies of a court would try his patience, he would dearly love to choose, as may a king, the men with whom he would have an after-dinner chat, and he proceeded to name a score of the most distinguished scientific men and scholars in England, to each of whom he would like to put a question. Even those of us who have the least longing for the responsibilities which weigh upon a sovereign, cannot but feel how great a privilege it would be if we were brought into close contact with the great men whom the worthy schoolmaster imagined sitting at the royal table.

The amount of error which we absorb from the reading of carelessly written newspaper paragraphs is so astounding, the fog through which the milestones of progress present themselves to the eye of the casual reader is so profound, that the good serving-men, "What," "Why," "When," "How," "Where," and "Who," often return from their scouting expeditions with reports that lead us hopelessly astray. In this respect, at any rate, it is within every man's power to control his environment, so to choose his intellectual surroundings that his mind grows daily more precise.

A man who forms the habit of consulting the Encyclopædia Britannica whenever a question arises in his mind, will turn to the volume half a dozen times in the course of a quiet evening's talk or reading, and always find the answer he needs. And even although the question with which he comes to the great library of reference may not in itself be of great importance, he is always tempted to read a little more, to increase the store of information which makes one of the most marked differences between the average man in the street and the man who, by reason of a broader knowledge, commands the attention of his fellows. It may no doubt be said that this is desultory reading, and that desultory reading is always

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considered less useful than systematic reading. The objection is easily answered. Stray half hours with books are for the most part unfruitful because a man usually wastes those half hours over the trash of the railway book-stall, or the last machine-made novel from the circulating library. To read any article in the Encyclopædia Britannica enriches the mind, and men who are too tired at the end of the day's work or the day's pleasure to undertake anything so formidable as a systematic course of reading, on turning to the Encyclopædia to resolve a doubt, will often find themselves without conscious effort doing an amount of really useful reading which they never would have had the courage to plan for themselves.

John Wesley, on hearing a protest against certain new church music because it was too "catchy" in character, replied, "Why should the Devil have all the good tunes?" And on the same ground there is no reason why so dignified a work as the Encyclopædia Britannica should not exert its influence in the waste moments of life as well as in its graver hours. In this connection it must be remembered that the Encyclopædia Britannica is very far from being the repellent book which some people imagine it to be.

The title of the work is no doubt in some measure responsible for many misconceptions of this sort. The ponderous name comes down to us from the remote beginnings of the book, when it was first issued in 1768, and in those days it was considered indecorous for knowledge to present itself in other than the most solemn attire. Yet the romances of real life are none the less fascinating because one describes them as history and biography, and even a schoolboy will find in the Encyclopædia Britannica delightfully clear and stirring accounts of all his heroes. It is indeed, throughout, a book written in the most unpretentious style; the writers who made it are men of such intellectual stature that they had no need to strut. Fat phrases, when they have any purpose at all, are employed by writers to cast broad shadows in which their ignorance may lie undetected. As a rule the man who absolutely knows through and through the subject he is talking about speaks plainly and to the point. Of all the contributors to the Encyclopædia Britannica it may be said that they wrote from the very fullest knowledge, and of many of them it may be said that they themselves were the actual creators of the knowledge which they present to the reader.

Before reading Lord Rayleigh's Article on ***Argon,*** the reader knows that an almost matchless knowledge of physics has been brought to bear on the subject; but the Article possesses an even higher value than this. Lord Rayleigh himself discovered Argon. In the same way, when Professor Dewar, in his Article on ***Liquid Gases,*** tells the story of liquefied air, he unfolds to us a secret which he himself wrested from nature by the use of a force more weird than any of which the mediæval sorcerers dreamed; using the chemical attribute of cold—the very essence of death in nature—he cubed it to a force so supernaturally lethal, that the very air we breathe yielded to its force and lay prone in the basin on his work-bench. And he tells us this story as simply and lucidly as Dr Nansen, in another Article, tells us the results of his fight against cold in the forbidden Arctic, where so many travellers have paid their lives in toll before the journey was well begun. When Sir Harry Johnston writes of Lakes Nyassa and Tanganyika, he knows them as a landowner knows the ornamental water on his own estate. It was he who founded the British power in Central Africa which he describes. German East Africa in turn is treated by Count Pfeil, who accompanied Dr Karl Peters on one of the most remarkable of equatorial expeditions. When Mr Walter Crane writes on ***Arts and Crafts*** his words seem to shape themselves into the clear curve and honest outline of the designs which have beautified English household life to such a degree that, when Italians boast of their blue skies, we can, at any rate, reply that the home beautiful of England has made an indoor climate equally delightful to the eye. The late G. A. Henty once said that a writer of books for boys set out with unfair odds against him, because the best fighting stories that ever could be written were read aloud to every schoolboy from the Book of Kings, and perhaps just as we forget how stirring are the pages of the Old Testament, because it has a so much larger importance for us, so we are likely to forget that a book which is really useful may be attractive as well.

Carlyle no doubt begged the question when he said that the best university was a good collection of books; but if the social influence of university life is not to be obtained by any other means, it is unquestionably true that the best possible substitute for the educational advantages of a university is that a lad should find thoroughly good reading in his home. No one who has children in his house does them full justice if he does not encourage them to enlist the services of Mr Kipling's six serving men. It is the fashion nowadays to jeer at many of the old traditions of British domestic life, but it would be hard to find a scene which promised more for the future of the coming generation than a winter's evening in a home where the volumes of the Encyclopædia Britannica suggest subjects for intelligent discussion. No other race in the world possesses such a book as this of ours, for in no other part of the world do the leaders in all branches of activity so clearly recognize that it is their duty to place their knowledge at the services of old and young and rich and poor alike.

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DRAMA

The Drama is often a looking-glass in which we see the hideousness of vice and the beauties of virtue.—FANNY KEMBLE.

HE aim of the Stage is twofold. It is at once a diversion and an education. We go to the theatre both to seek relief from the oppression of the minor realities which make up our personal experiences, and to see the eternal realities of life faithfully reflected in a form of Art. Plays are not only a spectacle, but they are material for silent reading at home and for lyrical utterance on the operatic stage. The subject of Drama, therefore, rightly extends into the subjects of Literature and Music, while the history of tragedians and comedians is appropriately suggested in the section of this pamphlet devoted to Biography.

The following fragments from the great mass of information on Classical, Mediæval, Romantic, and Modern Drama, contained in the Encyclopædia Britannica, serve no purpose but to convey a faint suggestion of the vast store of knowledge which has been accumulated on dramatic subjects.

THE RISE AND PROGRESS OF ENGLISH DRAMA.

From the Articles (63 pages) by ADOLPHUS WM. WARD, Litt.D., AUGUSTE FILON, and WM. ARCHER.

Drama.— . . . . . . Such had been the beginnings of tragedy in England up to the time when the genius of dramatists worthy to be called the predecessors of Shakespeare, under the influence of a creative literary epoch, seized the form ready to their hands.

Earliest comedies.

The birth of comedy, at all times a process of less labour, had slightly preceded that of tragedy in the history of our drama. Isolated Latin comedies had been produced in the original or in English versions or reproductions as early as the reign of Henry VIII., and the morality and its descendant, the interlude, pointed the way towards nationalizing and popularizing types equally fitted to divert Roman and Italian and English audiences. Thus the earliest extant English comedy, N. Udall's *Ralph Roister Doister*, which cannot be dated later than 1551, may be described as a genuinely English adaptation of Plautus, while its successor, *Gammer Gurton's Needle*, printed 1575, and probably written by (Bishop) Still, has an original, and in consequence a slighter, though by no means unamusing plot. In the main, however, our early English comedy, while occasionally introducing characters of genuinely native origin, and appealing to the traditional humours of Will Summer, the court-fool of Henry VIII., or Grim, the collier of Croydon, was content to borrow its themes from Italian or classical sources; Ariosto's *I Suppositi* found a translator in Gascoigne (1566), and the *Menæchmi* of Plautus translators or imitators in writers of rather later dates. While on the one hand the mixture of tragic with comic motives was already leading in the direction of tragi-comedy, the precedent of the Italian pastoral drama encouraged the introduction of figures and stories from classical mythology; and the rapid and versatile influence of Italian comedy seemed likely to continue to control the progress of the lighter branch of the English drama.

Conditions of the early Elizbethan drama.

Out of such promises as these the glories of our drama were ripened by the warmth and light of the great Elizabethan age—of which the beginnings may fairly be reckoned from the third decennium of the reign to which it owes its name. The queen's steady love of dramatic entertainments could not of itself have led, though it undoubtedly contributed, to such a result. Against the attacks which a nascent puritanism was already directing against the stage by the hands of Northbrooke, the repentant playwright Gosson, Stubbes, and others, were to be set not only the barren favour of royalty, and the more direct patronage of great nobles, but the fact that literary authorities were already weighing the endeavours of the English drama in the balance of respectful criticism, and that in the abstract at least the claims of both tragedy and comedy were upheld by those who shrunk from the desipience of idle pastimes. As the popularity of the stage increased, the functions of playwright and actor, whether combined or not, began to hold out a reasonable promise of personal gain. Nor, above all, was that higher impulse, which leads men of talent and genius to attempt forms of art in harmony with the tastes and tendencies of their times, wanting to the group of writers who can be remembered by no nobler name than that of Shakespeare's predecessors.

. . . .

English drama.

In England the whole mechanism of theatrical life had undergone a radical change in the middle decades of the century. At the root of this change lay the immense growth of population and the enormously increased facilities of communication between London and the provinces. Similar causes came into operation, of course, in France, Germany, and Austria, but were much less distinctly felt, because the numerous and important subventioned theatres of these countries remained more or less unaffected by economic influences. Free trade in theatricals (subject only to certain licensing regulations and to a court censorship of new plays) was established in England by an Act of 1843, which abolished the long moribund monopoly of the "legitimate drama" claimed by the "Patent Theatres" of Drury Lane and Covent Garden. The drama was thus formally subjected to the operation of the law of supply and demand, like any other article of commerce, and managers were left, unaided and unhampered by any subvention or privilege, to cater to the tastes of a huge and growing community. Theatres very soon multiplied, competition grew ever keener, and the long run, with its accompaniments of ostentatious decoration and lavish advertisement, became the one object of managerial effort. This process of evolution may be said to have begun in the second quarter of the 19th century and completed itself in the 3rd. The system which obtains to-day, almost unforeseen in 1825, was in full operation in 1875. The repertory theatre, with its constant changes of programme, maintained on the Continent partly by subventions, partly by the mere force of artistic tradition, had become in England a faint and far-off memory. . . . .

. . . .

In the first place, economic conditions. The Bancroft-Robertson movement at the old Prince of Wales's, between 1865 and 1870, was of even more importance from an economic than from a literary point of view. By making their little theatre a luxurious place of resort, and faithfully imitating in their productions the accent,

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costume, and furniture of upper and upper-middle class life, the Bancrofts had initiated a reconciliation between Society and the Stage. Throughout the middle decades of the century it was the constant complaint of the managers that the world of wealth and fashion was by no means to be tempted to the theatre. The Bancroft management changed all that. It was at the Prince of Wales's that half-guinea stalls were first introduced; and these stalls were always filled. As other theatres adopted the same policy of upholstery, both on and off the stage, fashion extended its complaisance to them as well. In yet another way the reconciliation was promoted—by the ever-increasing tendency of young men and women of good birth and education to seek a career upon the stage. For the past fifteen years, then, the theatre has been one of the favourite amusements of fashionable (though not necessarily of intellectual) Society. It is often contended that the influence of the sensual and cynical stall audience is a pernicious one. In some ways, no doubt, it is detrimental; but there is another side to the case. Even the cynicism of Society marks an intellectual advance upon the sheer rusticity which prevailed during the middle years of the 19th century and accepted without a murmur plays (original and adapted) which bore no sort of relation to life. In a celebrated essay published in 1879, Matthew Arnold dwelt on the sufficiently obvious fact that the result of giving English names and costumes to French characters was to make their sayings and doings utterly unreal and "fantastic." . . . .

[*The above is but a 68th part of the space devoted to the single subject* DRAMA *in the Tenth Edition.*]

Sir Richard Jebb writes the Article OLYMPIA in Vol. 17.

ORIGIN OF TRAGEDY AND COMEDY.

From the Article (73 pages) by Prof. Sir R. JEBB, Principal DONALDSON, A. S. WILKINS, and JOHN RAE.

Greece.— . . . . . . "Tragedy" meant "the goat-song," a goat being sacrificed to Dionysus before the hymn was sung. "Comedy," "the village-song," is the same hymn regarded as an occasion for rustic jest. Then the leader of the chorus would assume the part of a messenger from Dionysus, or even that of the god himself, and recite an adventure to the worshippers, who made choral response. The next step was to arrange a dialogue between the leader (*coryphœus*) and one chosen member of the chorus, hence called "the answerer" (*hypocrites*, afterwards the ordinary word for "actor"). This last improvement is ascribed to the Attic Thespis (about 536 B.C.). The elements of drama were now ready. The choral hymn to Dionysus (the "dithyramb") had received an artistic form from the Dorians; dialogue, though only between the leader of the chorus and a single actor, had been introduced in Attica. Phrynichus, an Athenian, celebrated in this manner some events of the Persian wars; but in his "drama" there was still only one actor.

Tragedy.

Æschylus (born 525 B.C.) became the real founder of tragedy by introducing a second actor, and thus rendering the dialogue independent of the chorus.

[*See also* EURIPIDES, ÆSCHYLUS, *and* SOPHOCLES.]

MEDIÆVAL PLAYS.

From the Article (63 pages) by ADOLPHUS WM. WARD, Litt.D., AUGUSTE FILON, and WM. ARCHER.

Drama.— . . . . . . The productions of the mediæval religious drama it is usual technically to divide into three classes. The *mysteries* proper deal with scriptural events only, their purpose being to set forth, with the aid of the prophetic or preparatory history of the Old Testament, and more especially of the fulfilling events of the New, the central mystery of the Redemption of the world, as accomplished by the Nativity, the Passion, and the Resurrection. But in fact these were not kept distinctly apart from the *miracle-plays*, or *miracles*, which are strictly speaking concerned with the legends of the saints of the church; and in England the name *mysteries* was not in use. Of these species the miracles must more especially have been fed from the resources of the monastic literary drama. Thirdly, the *moralities*, or *moral-plays*, teach and illustrate the same truths; not, however, by direct representation of scriptural or legendary events and personages, but allegorically, their characters being personified virtues or qualities. Of the moralities the Norman *trouvères* had been the inventors; and doubtless this innovation connects itself with the endeavour, which in France had almost proved victorious by the end of the 13th century, to emancipate dramatic performances from the control of the church. . . . . . .

Mysteries, miracles, and morals distinguished.

. . . .

At times favoured, at times denounced by the clergy, dramatic entertainments thus lustily flourished for a series of centuries, in some countries more, in others less, religious in their character, and variously reinforced by the efforts of the craftsmen of the acting profession. In France, where they had always preserved a secular side, they soonest advanced into forms connecting themselves with later growths of the drama. At Paris the fraternity of the *Bazoche* (clerks of the Parliament and the Châtelet) in 1303 acquired the right of conducting the popular festivals; but after the *Confrérie de la Passion*, who devoted themselves originally to the performance of passion-plays, had obtained a royal privilege for this purpose in 1402, the *Bazoche* gave itself up to the production of moralities. . . . .

Progress of the mediæval drama in Europe.

. . . . In Germany, on the other hand (the history of whose drama so widely differs from that of the Spanish), religious plays were performed probably as early as the 12th century at the Christmas and Easter festivals. Other festivals were afterwards celebrated in the same way, but up to the Reformation Easter enjoyed the preference. About the 14th century miracle-plays began to be frequently performed; and as these often treated subjects of historical interest, local or other, the transition to the barren beginnings of the German historical drama was afterwards easy. Though these early German plays often have an element of the moralities, they were not as in France blended with the drolleries of the professional strollers (*fahrende Leute*), which, carried on chiefly in carnival time, gave rise to the Shrove-Tuesday plays (*Fastnachtsspiele*), scenes from common life largely interspersed with practical fun. To these last a more enduring literary form was first given in the 15th century by Hans Rosenplüt, called Schnepperer—or Hans Schnepperer, called Rosenblüt—the predecessor of Hans Sachs. By this time a connexion was establishing itself in Germany between the dramatic amusements of the people and the literary labours of the *master-singers;* but the religious drama proper survived in Catholic Germany far beyond the times of the Reformation, and was not suppressed in Bavaria and Tyrol till the end of the 18th century.[1] . . . .

[1] The passion-play of Oberammergau, familiar in its present artistic form to so many visitors, was instituted under special circumstances in the days of the Thirty Years' War (1634). Various reasons account for its having been allowed to survive.

[*See the Article* MYSTERY *in connexion with the subject of this extract.*]

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A PAGE OF DRAMATISTS.

"LOUIS SEIZE" DRAMA.

From the Article on

Beaumarchais.— . . . . . . During the same period he had laid the foundations of a more enduring fame by his two famous comedies, the best of their class since those of Molière. The earlier, *Le Barbier de Seville*, after a short prohibition, was put on the stage in 1775. The first representation was a complete failure. Beaumarchais had overloaded the last scene with allusions to the facts of his own case and the whole action of the piece was laboured and heavy. But with undaunted energy he set to work, cut down and remodelled the piece in time for the second representation, when it achieved a complete success. The intrigues which were necessary in order to obtain a license for the second and more famous comedy *Le Mariage de Figaro* are highly amusing, and throw much light on the unsettled state of public sentiment at the time. The play was completed in 1781, but the opposition of Louis XVI., who saw its dangerous tendencies, was not overcome till 1784. The comedy had an unprecedented success. The principal character in both plays, the world-famous *Figaro*, is a completely original conception; and for mingled wit, shrewdness, gaiety, and philosophic reflection, may not unjustly be ranked alongside of the great Tartuffe. . . . .

SPANISH MIRACLE PLAYS.

A brief extract from the Article by Dr. RICHARD GARNETT, L.L.D.

Calderon.— . . . . . . *Autos Sacramentales.*—A volume might be written upon this most peculiar of all the forms of the modern European drama. We can only describe it here as a development of the mystery or miracle play of the Middle Ages, designed like it for public representation on some specified religious occasion, and falling like it into two classes, the strictly Biblical play, of which Calderon's *Brazen Serpent* is an instance, and the religious allegory. The latter is Calderon's characteristic department, and nothing can surpass the boldness and quaintness of his personifications. Man, the World, Guilt, the Morning Star, the Synagogue, and Apostacy figure, for example, among his innumerable *dramatis personæ*. . . . .

THE AUTHOR OF GIL BLAS AND THE THEATRE FRANCAIS.

From the Article (2 pages) by GEORGE SAINTSBURY.

Le Sage.— . . . . . . Notwithstanding the great merit and success of *Turcaret* and *Crispin*, the Théâtre Français did not welcome him, and in the year of the publication of *Gil Blas* he began to write for the Théâtre de la Foire—the comic opera held in booths at festival time. This, though not a very dignified occupation, was followed by many writers of distinction at this time, and by none more assiduously than by Le Sage. According to one computation he produced either alone or with others about a hundred pieces, varying from strings of songs with no regular dialogues, to comediettas only distinguished from regular plays by the introduction of music. He was also industrious in prose fiction. Besides finishing *Gil Blas* he translated the *Orlando Inamorato*, rearranged *Guzman d'Alfarache*, published two more or less original novels, *Le Bachelier de Salamanque* and *Estévanille Gonzales*, and in 1733 produced the *Vie et Aventures de M. de Beauchéne*, which is curiously like certain works of Defoe. Besides all this, Le Sage was also the author of *La Valise Trouvée*, a collection of imaginary letters, and of some minor pieces, of which *Une Journée des Parques* is the most remarkable. This laborious life he continued until 1740, when he was more than seventy years of age. . . . .

A MASTER WRITER OF ITALIAN COMEDY.

From the Article on

Goldoni.— . . . . . . Once he promised to write sixteen comedies in a year, and kept his word; among the sixteen are some of his very best, such as *Il Caffè*, *Il Bugiardo*, *La Pamela*. When he left the company of Medebac, he passed over to that maintained by the patrician Vendramin, continuing to write with the greatest facility. In 1761 he was called to Paris, and before leaving Venice he wrote *Una delle ultime Sere di Carnevale* (One of the Last Nights of Carnival), an allegorical comedy in which he said good-bye to his country. At the end of the representation of this play, the theatre resounded with applause, and with shouts expressive of good wishes. Goldoni, at this proof of public sympathy, wept as a child. At Paris, during two years, he wrote comedies for the Italian actors; then he taught Italian to the royal princesses; and for the wedding of Louis XVI. and of Marie Antoinette he wrote in French one of his best comedies, *Le Bourru Bienfaisant*, which was a great success. . . . .

SCANDINAVIAN DRAMA.

A portion of the Article on

Ibsen.— . . . . . . With *Rosmersholm* (1885) he rose to the height of his genius again; this is a mournful, but neither a pessimistic nor a cynical play. The fates which hang round the contrasted lives of Rosmer and Rebecca, the weak-willed scrupulous man and the strong-willed unshrinking woman, the old culture and the new, the sickly conscience and the robust one, create a splendid dramatic antithesis. Since that time, Ibsen has written a series of dramas, of a more and more symbolical and poetic character; the earliest of these was the mystical *The Lady from the Sea* (1888). At Christmas 1890 he brought out *Hedda Gabler*; two years later *The Mäster-builder*, in which many critics see the highest attainment of his genius; at the close of 1894 *Little Eyolf*; at Christmas 1896 *John Gabriel Borkman*; and in January 1900 *When We Dead Awaken*. . . . .

From the Article on

Björnson.— . . . . . . Extremely anxious to obtain a full success on the stage, Björnson concentrated his powers on the drama called *Leonarda*, which appeared in 1879. This was an appeal for religious toleration, and it raised a violent controversy. This was not allayed by a satirical play, *The New System*, which was brought out a few weeks later. Although these plays of Björnson's second period were greatly discussed, none of them (except *A Bankruptcy*) pleased on the boards. He was greatly disappointed and for some years again preserved silence as a dramatist. When once more he produced a social drama, *A Gauntlet*, in 1883, he was unable to persuade any manager to stage it at all. . . . .

For the titles of some more of the articles on Dramatists and Drama, see p. 142.

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For the titles of some of the articles on Literature, see p. 124 of this pamphlet.

THE RUSSIAN STAGE IN THE 18th and 19th CENTURIES.

From the Article (57 pages) by Prince KROPOTKIN, W. R. MORFILL, M.A., *and* Sir D. MACKENZIE WALLACE, K.C.I.E., K.C.V.O.

Russia.— . . . . . . From the commencement of the reign of Elizabeth Russian literature made great progress, the French furnishing models. Alexander Sumarokoff (1718–1777) wrote prose and verse in abundance—comedies, tragedies, idyls, satires, and epigrams. . . . It took the Russians some time to find out that their language was capable of the unrhymed iambic line, which is the most suitable for tragedy. His *Dmitri Samozvanetz* ("Demetrius the Pretender") is certainly not without merit. Some of the pieces of Kniazhnin had great success in their time, such as *The Chatterbox*, *The Originals*, and especially *The Fatal Carriage*. He is now, however, almost forgotten. In 1756 the first theatre was opened at St Petersburg, the director being Sumarokoff. Up to this time the Russians had acted only religious plays, such as those written by Simeon Polotzki. . . . .

Sumarokoff. *Kniazhnin.*

Since the *Boris Godunoff* of Pushkin, which was the first attempt in Russia to produce a play on the Shakespearian model, many others have appeared in the same style. A fine trilogy was composed by Count A. Tolstoi on the three subjects, *The Death of Ivan the Terrible* (1866), *The Czar Feodor* (1868), and *The Czar Boris* (1869). . . . .

Recent drama.

DEXTERITY IN THE CONSTRUCTION OF PLOTS.

A passage from the Life of

Sardou.— . . . . . . He soon ranked with the two undisputed leaders of dramatic art, Augier and Dumas. He lacked the powerful humour, the eloquence and moral vigour of the former, the passionate conviction and pungent wit of the latter, but he was a master of clever and easy flowing dialogue. He adhered to Scribe's constructive methods, which combined the three old kinds of comedy—the comedy of character, of manners, and of intrigue—with the *drame bourgeois*, and blended the heterogeneous elements into a compact body and living unity. He was no less dexterous in handling his materials than his master had been before him, and at the same time opened a wider field to social satire. He ridiculed the vulgar and selfish middle class person in *Nos Intimes*, the gay old bachelors in *Les Vieux Garçons*, the modern Tartufes in *Séraphine*, the rural element in *Nos Bons Villageois*, the old-fashioned customs and antiquated political beliefs in *Les Ganaches*, the revolutionary spirit and those who thrive on it in *Rabagas* and *Le Roi Carotte*, the then threatened divorce laws in *Divorçons*.

He struck a new vein by introducing a strong historic element in some of his dramatic romances. Thus he borrowed *Théodora* from Byzantine annals, *La Haine* from Italian chronicles, *La Duchesse d'Athènes* from the forgotten records of mediæval Greece. *Patrie* is founded on the rising of the Dutch *gueux* at the end of the 16th century. The French Revolution furnished him with three plays, *Les Merveilleuses*, *Thermidor*, and *Robespierre*. (The last named was produced by Sir Henry Irving at the Lyceum, and has never yet been seen on any French stage.) The Imperial epoch was revived in *La Tosca* and *Madame Sans Gêne*. In many of these plays, however, it was too obvious that a thin varnish of historic learning, acquired for the purpose, had been artificially laid on to cover modern thoughts and feelings. . . . .

ETERNAL STAGE TYPES.

From the Article (1 page) by R. MORTIMER WHEELER.

Punchinello.— . . . . . . It is possible that some relic of the old *Ludi Osci*, transmitted through the Vice of the mystery plays, is to be found in the character; but any direct descent from the Maccus of the Atellanæ seems precluded by the fact that, while there are traces of the gradual development of the northern Punch from the Neapolitan Pulcinella, the latter with its grey hat, white smock and trousers, masked face, and undistorted body is widely different from its alleged prototype. It seems necessary, therefore, to regard the Pulcinella as in large part a distinct creation of comparatively modern date. Prior to the 17th century there is no indication in the Italian burlesque poets of the existence of Pulcinella, though Riccoboni places the creation of the part before 1600.

Andrea Perrucci (1699) and Gimma assert with some show of authority that Silvio Fiorillo, a comedian named after his principal part Captain Matamoros (the Italian *Miles Gloriosus*), invented the Neapolitan Pulcinella. . . . This would place the origin of the Italian Pulcinella somewhere about the commencement of the 17th century, the original character appearing to have been that of a country clown, hook-nosed, shrill-voiced, cowardly, boastful, and often stupid, yet given at times to knavish tricks and shrewd sayings. In thorough accordance with this date, we find that the earliest known appearance of Polichinelle in France is at the commencement of the reign of Louis XIV., in the show of the puppet-playing dentist Jean Brioché. It might have been expected that the shrewder and wittier side of the character would most commend itself to the French mind, and there is good reason to believe that the Polichinelle of Brioché was neither a blunderer nor a fool. The puppet . . . is described in the *Combat de Cyrano de Bergerac* as a "petit Ésope de bois, remuant, tournant, virant, dansant, riant, parlant, petant" and as "cet hétéroclite marmouset, disons mieux, ce drolifique bossu." . . . .

HARLEQUIN AND COLUMBINE.

From the Article (2 pages) by A. W. WARD, M.A., *Prof. of English Literature.*

Pantomime.— . . . . . . It should be noted that in France an attempt was made by NOVERRE (*q.v.*) to restore pantomime proper to the stage as an independent species, by treating mythological subjects seriously in artificial ballets. . . . In an anonymous tract of the year 1789 in the Dyce Library, attributed by Dyce to Archdeacon Nares (the author of the *Glossary*), Noverre's pantomime or ballet *Cupid and Psyche* is commended as of very extraordinary merit in the choice and execution of the subject. It seems to have been without words. The writer of the tract states that "very lately the serious pantomime has made a new advance in this country, and has gained establishment in an English theatre;" but he leaves it an open question whether the grand ballet of *Medea and Jason* (apparently produced a few years earlier, for a burlesque on the subject came out in 1781) was the first complete performance of the kind produced in England. He also notes *The Death of Captain Cook*, adapted from the Parisian stage, as possessing considerable dramatic merit, and exhibiting "a pleasing picture of savage customs and manners." To conclude, the chief difference between the earlier and later forms of English pantomime seems to lie in the fact that in the earlier Harlequin pervaded the action, appearing in the comic scenes which

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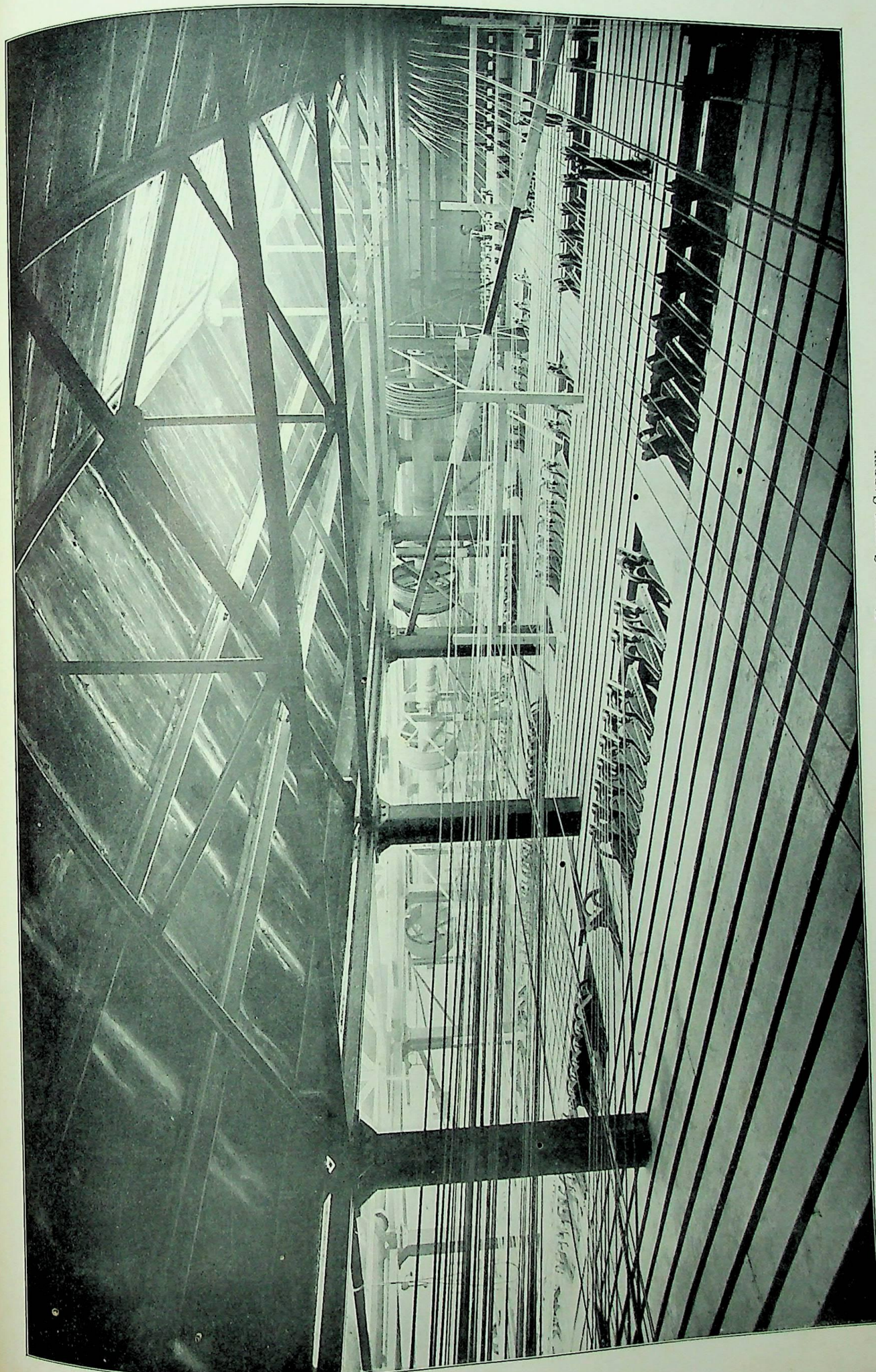
A Plate from the Tenth Edition illustrating the advances in Stage Mechanism at Covent Garden Theatre.

THE NEW "GRIDIRON," ROYAL OPERA HOUSE, COVENT GARDEN.

(From a Photograph by Alfred Ellis and Walery.)

The substitution of Electric for Hydraulic Power in Stage Mechanism has been a valuable aid in the presentation of modern spectacular drama.

See further Articles: **ELECTRICITY, ELECTRICITY SUPPLY, ACCUMULATORS, DYNAMOS, etc.**

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The dramatic incident commemorated in this group by Rodin is referred to in the late Dr Rawson Gardiner's Article ENGLAND, and in the Article CALAIS.

"THE BURGHERS OF CALAIS." By AUGUSTE RODIN.

AUGUSTE RODIN is but one of the many sculptors to whom the Tenth Edition devotes separate Articles.

VICTOR HUGO. By AUGUSTE RODIN.

The Article on VICTOR HUGO in the Tenth Edition is by Mr Swinburne.

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alternated throughout the piece with the serious which formed the backbone of the story. Columbine (originally in Italian comedy Harlequin's daughter) was generally a village maiden courted by her adventurous lover, whom village constables pursued, thus performing the laborious part of the policeman of the modern harlequinade. The brilliant scenic effects were of course accumulated, instead of upon the transformation scene, upon the last scene of all, which in modern pantomime follows upon the shadowy chase of the characters called the *rally*. The commanding influence of the clown, to whom pantaloon is attached as friend, flatterer, and foil, seems to be of comparatively modern growth; the most famous of his craft was undoubtedly Joseph Grimaldi (1779–1837), of whom Charles Dickens in his youth edited a biography. His memory is above all connected with the famous pantomime of *Mother Goose*, produced at Covent Garden in 1806. . . .

SILENT DRAMA.

From the Article by WILLIAM CHAPPELL.

Ballet.— . . . . . . The disuse of dialogue and of vocal music in ballet seems to have been arrived at only by degrees. One of the most complete books upon the subject is by the Jesuit Le Père Menestrier (Claude François), *Des Ballets Anciens et Modernes*, 12mo, 1681. He was the inventor of a ballet for Louis XIV. in 1658; and in his book he analyses about fifty of the early Italian and French ballets. His definition is as follows:—"Ballets are dumb comedies, which should be divided into acts and scenes, like other theatrical pieces. Recitations divide them into acts, and the entrées of dancers are equal in number to the scenes." . . . .

CRITIC AND DRAMATIST.

From the Article (4 pages) by JAMES SIME, M.A., Author of "Life and Writings of Lessing."

Lessing.— . . . . . . Some medical lectures he did attend; but his ambition was to become a great dramatist, and as long as Frau Neuber's company kept together he occupied himself almost exclusively with the theatre, being frequently present at rehearsal during the day as well as at the performance in the evening.

In 1748 the company broke up. . . . . In Berlin Lessing now spent three years, maintaining himself chiefly by literary work. . . . His father had been bitterly opposed to his scheme of life, and in 1751 urged him to complete his studies at the university of Wittenberg. Feeling the need of further thought and research, Lessing at last consented, and at the close of the year left Berlin. It is worthy of note that he had been brought into slight contact with Voltaire, for whom he had translated some documents relating to the Hirsch trial. . . . .

HISTORY IN GERMAN DRAMA.

From the Article (4 pages) by JAMES SIME, M.A., Author of "History of Germany."

Schiller.— . . . . . . Schiller never intended that *Don Carlos* should be his last drama, and from 1791 he worked occasionally at a play dealing with the fate of Wallenstein. He was unable, however, to satisfy himself as to the plan until 1798, when, after consulting with Goethe, he decided to divide it into three parts, *Wallensteins Lager*, *Die Piccolomini*, and *Wallensteins Tod*. *Wallensteins Lager* was acted for the first time at the Weimar theatre in October 1798, and *Die Piccolomini* in January 1799. In April 1799 all three pieces were represented, a night being given to each. The work as a whole produced a profound impression, and it is certainly Schiller's masterpiece in dramatic literature. . . . Wallenstein is the most subtle and complex of Schiller's dramatic conceptions, and it taxes the powers of the greatest actors to present an adequate rendering of the motives which explain his strange and dark career. The love-story of Max Piccolomini and Thekla is in its own way not less impressive than the story of Wallenstein with which it is interwoven. Max and Thekla are purely ideal figures, and Schiller touches the deepest sources of tragic pity by his masterly picture of their hopeless passion and of their spiritual freedom and integrity. . . . .

"WHOM TIME ASSAILS NOT."

From the Article (16 pages) by OSCAR BROWNING, M.A.

Goethe.— . . . . . . The second part of *Faust* has been a battlefield of controversy since its publication, and demands fuller attention. Its fate may be compared with that of the latest works of Beethoven. For a long time it was regarded as impossible to understand, and as not worth understanding, the production of a great artist whose faculties had been impaired by age. By degrees it has, by careful labour, become intelligible to us, and the conviction is growing that it is the deepest and most important work of the author's life. Its composition cannot be called an afterthought. There is no doubt that the poet finished at the age of eighty the plan which he had conceived sixty years before. The work in its entirety may be described as the first part of *Faust* "writ large." This is a picture of the macrocosm of society as that was of the microcosm of the individual. The parallelism between the two dramas is not perfect, but it reveals itself more and more clearly to a patient study. . . . .

Second part of Faust.

To the Tenth Edition itself the reader must go if he would trace the art of acting through its complex and various stages from the festival of Dionysus to the latest production of the Théâtre Français. Here he may study the conditions of dramatic writing when Aristophanes and Æschylus founded in Greece an eternal monument of literary drama for the rest of the world. Here, too, he will find the poetry of the Indian and Chinese dramas discussed with accuracy and appreciation. He may compare the characteristics of Lord Byron's *Manfred* with *Pi-Pa-Ki* (The Story of the Lute), the famous Chinese drama by Kao-Tong-Kia, which was produced under the Ming dynasty.

It is one thing to want to know and another thing to know how to find out what you want to know. To enable the reader to obtain minute information, an Index of more than half a million entries has been compiled, with the aid of which facts may be easily and rapidly acquired in all the provinces of human knowledge comprised within the Tenth Edition of the *Encyclopædia Britannica*.

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THE PLAY-GOER AS CRITIC.

DIFFERENCES of opinion as to the merits or defects of a new play might be thought to be abolished by the authoritative reviews of experienced dramatic critics. But so far from establishing a consensus of opinion, the critics, as we all know, are constantly at variance with one another.

Every enthusiastic play-goer may cultivate for himself a critical sense which will enable him to dispense with the *Obiter Dicta* of the newspapers. But in order to supersede the critic he must arm himself with the critic's weapons—that is to say, he must study the history of the Drama, evolve a philosophy of dramatic art, and finally apply mature conclusions to the production and performance of current plays. Thus, if he had read the article **Villon**, the portion of the historical article **France** dealing with Louis XI., and Mr Saintsbury's observations on Villon in the portion devoted to Literature, he would be far more competent to judge what degree of truth or verisimilitude has been attained in the play *If I were King*. Nor can Drury Lane fail to excite a heightened interest in us if we know something of the history of theatres in London, which we may find in the article **London.** Articles such as **Stage Mechanism, Pantomime, Ballet,** will further enlighten us in the particular forms of Dramatic entertainment with which tradition has long associated certain play-houses.

Among the Actors to each of whom the Tenth Edition devotes separate accounts are:

SARAH BERNHARDT, EDWIN BOOTH, FANNY KEMBLE, J. JEFFERSON, ELLEN TERRY, DION BOUCICAULT, MADAME MODJESKA, JOHN TOOLE, MRS KEELEY, E. A. SOTHERN, MRS SIDDONS, COQUELIN, RACHEL, SIR HENRY IRVING, SALVINI.

Among the Dramatists treated at length in the Encyclopædia Britannica are:

SHAKESPEARE, CALDERON, GOETHE, BEAUMONT AND FLETCHER, BEN JONSON, MASSINGER, FORD, SHIRLEY, CONGREVE, WYCHERLEY, DEKKER, OTWAY, APHRA BEHN, ADDISON, SHERIDAN, GOLDSMITH, BYRON, SHELLEY, BROWNING, IBSEN, BJORNSEN, ECHEGARAY, LESSING, SCHILLER, SARDOU, MOLIÈRE, RACINE, CORNEILLE, SCRIBE, DUMAS.

Mr SAINTSBURY writes on

VILLON.

The Article

LONDON

is by T. F. HENDERSON and H. B. WHEATLEY.

STAGE MECHANISM AND SCENERY

are discussed by E. O. SACHS and WILLIAM TELBIN.

Professor A. W. WARD writes on

PANTOMIME.

Mr WILLIAM CHAPPELL writes on

BALLET

ACTORS PAST AND PRESENT.

THE value of the *Encyclopædia Britannica* to the play-goer is not confined to the instances of which we have already given example. A knowledge of the career of **Rachel** will enable us all the more adequately to appreciate that of the **Bernhardt.** To know nothing of **Garrick** is to miss a complete appreciation of one of Mr Charles Wyndham's most triumphant impersonations. The dramatic power which has distinguished Signor Tamagno's performance of Verdi's *Otello* at once suggests the historical performance of the great Shakespearian rôle by **Salvini. Sir Henry Irving** to-day plays many of the parts canonized for our ancestors by the performances of **Phelps, Fechter, Macready, Kean, Kemble,** to each of whom, as well as to Sir Henry himself, the Tenth Edition devotes a separate article. Nor is it less true in a historical sense that **Ellen Terry** is a successor to **Mrs Siddons.** To many people the incomparable **Coquelin** is the sole source of interpretation for **Molière.** Similarly, much as we may lament the decline of classics as a power in education, we cannot shut our eyes to the fact that of the many people to whom the play of *Œdipus* is known, by far the greater number have heard it in the Alexandrines declaimed by **M. Mounet-Sully,** and have not read it at all in the pages of Sophocles. Not the least important of the varied information on Drama in the Tenth Edition will also be found in the article **Social Progress.**

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COMMERCE

If you would work any man, you must either know his nature and fashions, and so lead him; or his ends, and so win him; or his weaknesses or disadvantages, and so awe him; or those that have interest in him, and so govern him.—BACON.

LORD MACAULAY once taunted England with being "A Nation of Shopkeepers." For the Englishman of to-day the taunt has lost its point. If there is one lesson which the latter end of the nineteenth century has taught us all, it is that in Commerce lies what slender hope the human race possesses of reaching the Millennium. More than that, History teaches us that the very position of England as a world-controlling Empire has been attained by commercial enterprise. It is next to certain that if the Dutch, in the arrogance of their trade monopoly, had not in the closing years of the sixteenth century forced up the price of pepper to a point at which the British consumer would not and could not buy, the famous East India Company, which became mistress of India and trustee of that priceless possession and addition to the Empire, would never have been founded. In almost every quarter of the vast British dominions the same lesson might be learned. By resolute enterprise, by the untiring search for new markets, and by the courage and honesty of their dealings, the "Nation of Shopkeepers" has become a "Nation of World-Governors." Commerce to-day is the keystone of the policy of all countries, and it is not chimerical to hope for that time when the races of humanity will have become so completely one another's creditor and debtor, that to wage war will be as reasonable as to destroy the bank in which one's wealth is deposited.

It is this modern aspect of Commerce, then, which is of such international importance, and to this the Tenth Edition gives prominence in a series of articles which survey the problems destined to shape the world's policy during the next decade. How exhaustive the treatment of the subject has been, may be realized by any one who will glance over the subjoined extracts, which pretend to be no more than examples of some of the many subjects dealt with in the Encyclopædia Britannica.

THE FIRST "CORNER" IN WHEAT.

From the Article (26 pages) by G. J. S. BROOMHALL, Editor of the "Corn Trade Year Book."

Grain Trade.— . . . . . . Wheat, the great staple food of the most progressive portion of mankind, occupies of all cereals the widest region of any foodstuff. Rice, which shares with millet the distinction of being the principal foodstuff of the greatest number of human beings, is not grown nearly as widely as the white man's favourite cereal. Wheat grows as far south as Patagonia, and as far north as the edge of the Arctic Circle; it flourishes throughout Europe, and across the whole of Northern Asia and in Japan; it is cultivated in Persia, and raised largely in India, as far south as the Nizam's dominions. It is grown in almost every state of the American Union, from Southern California to the State of Washington. In the Dominion of Canada a very fine wheat crop was raised in the autumn of 1898 as far north as the mission at Fort Providence, on the Mackenzie river, in a latitude above 62°—the latitude of the Faroe Islands, or less than 200 miles south of the latitude of Dawson City; the period between seed-time and harvest having been ninety-one days. In Africa we hear of it as an article of commerce in the days of the patriarch Jacob, whose son Joseph may be said, in the parlance of the corn market, to have run the first and only successful "corner" in the staff of life. For many centuries Egypt was famous as a wheat raiser; it was a cargo of wheat from Alexandria which the Apostle St Paul helped to jettison on the occasion of one of his shipwrecks, as was also, in all probability, that of the "ship of Alexandria whose sign was Castor and Pollux," named in the same narrative. General Gordon is quoted as having stated that the Sudan when properly settled would be capable of feeding the whole of Europe. It is known that the cereal flourishes on all the high plateaux of South Africa, from Cape Town to the Zambezi. Additional land is being rapidly and extensively put under wheat in the pampas of South America and in the prairies of Siberia. There are tracts along the north coast of Africa which, if properly irrigated, as was done in the days of Carthage, and as is done in India under British rule to-day, could produce a sufficiency of wheat to feed half of the Caucasian race. For an instance, the vilayet of Tripoli, with an area of 400,000 square miles, or three times the extent of Great Britain and Ireland, according to the opinion of a British consul could raise millions of acres of wheat. . . . .

[*Much of interest to the wheat-grower is to be read in the 6-page article, Vol. 24, entitled* WHEAT.]

ARE WAGES AFFECTED BY MONOPOLIES?

From the Article (6 pages) by J. W. JENKS, Ph.D., Professor of Political Economy, Cornell University, U.S.A.

Trusts.— . . . . . . From the savings which it is possible for the combinations to make, it would seem possible for them to pay higher rates of wages to those remaining in their employment than it was possible for the constituent companies to do. In certain instances, especially when the combination has first been made, wages have been increased. On the whole, however, it is probable that as yet the wage-earners have succeeded in getting an increase of wages in circumstances substantially similar to those under which their wages would be increased by single corporations. An increase of wages comes only through pressure on their part. Under a prosperous condition of industry it is possible, without materially lowering profits, to increase the wages.

The trust and wages.

Certain classes of employés, especially superintendents and commercial travellers, are less needed by the combinations, and consequently the total sum of wages paid to these classes by the combination is less than that formerly paid by the constituent companies. On the other hand, the number of employés of these classes being less than before, the average wage has, in certain cases at least, been increased.

. . . .

Great Britain.—The tendency toward consolidation has been for several years very noticeable in Great Britain,

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although until within the last few years the form has been rather that of a pool or ring than that of a trust or of a single large corporation. In the coal and milling industries there have been agreements; and, particularly in London and other distributing centres, these selling combinations have been able at times to control the market. This has also been true with reference to certain kinds of provisions, such as the bacon imported from Denmark.

European experience.

Of late years there has been a marked tendency towards the formation of large corporations that buy up a very large proportion of competing manufacturing plant, and in this way secure at least a temporary monopoly of the market. The Salt Union was formed along these lines, but this has not proved successful, owing probably to the fact that new sources of supply were discovered. The dyeing industries in Bradford and in Yorkshire have been consolidated, so that in certain respects they have an absolute monopoly of the business, and in most directions of over 90 per cent. of it. The calico printers, the fine cotton spinners, the thread manufacturers, the bleachers, and others connected with the cotton manufacturing industries in Great Britain, have nearly all been brought together into large corporations which control from 90 per cent. upwards of the entire business. Similar combinations in cement, wall-paper, soap, and other trades have been formed. Most of these large corporations have been in existence for such a short time that one cannot yet judge accurately regarding their permanent success. Many of them seem to have been overcapitalized, and their dividends have not always met shareholders' anticipations. There has been no active popular movement against consolidation in England, and the Government has passed no laws opposed to it.

. . . .

[TARIFFS, BALANCE OF TRADE, ECONOMICS, FREE TRADE, PROTECTION, *and* COMMERCIAL TREATIES *are some Articles on kindred subjects in the Tenth Edition.*]

AN ETERNAL TRADE-PROBLEM.

From the Article (11 pages) by Prof. THOROLD ROGERS.

Free Trade. . . . . . . To a Government which spends, but does not produce, the possession of treasure is of the greatest utility and service. To an individual who produces and trades, still more to one who trades only, treasure is, as a rule, the least valuable instrument of traffic, as it is an article from which, as it is affected by the least possible variation in value, the least amount of profit can be anticipated by those who deal in it as an article of trade. A trader in the Middle Ages would have readily accepted the doctrine that money was wealth as far as regarded every one but himself; as far as he was concerned, he wished to get rid of his money as soon as he could, in exchange for goods, on which he might secure his profits. The doctrine that the machinery of international trade supplied the process by which the precious metals were distributed, and that therefore, if trade were to exist, the attempts of Government to restrain the exportation of money were mischievous or nugatory, was argued as early as the middle of the 14th century by Sanuto the Venetian, and by Oresme the bishop of Lisieux, in language as precise as any used by Turgot or Adam Smith. The reasonings, however, by which protective theories were upheld, the mean and malignant arguments of restraint, as Adam Smith calls them, were always strengthened in England up to thirty years ago, by suggesting the hideous consequences which would come on the nation from a drain of gold. Protection had its origin in the reputed duty of Government towards the currency. Once established, it created artificial interests whose existence was a loss to the whole community, but whose maintenance seemed to be the satisfaction of a contract entered into between the Government and the industry which the Government had called into being or had stimulated. . . . .

[*An interesting Article in the Tenth Edition is that entitled* FREE PORTS, *contributed by Sir C. M. Kennedy, K.C.M.G., C.B., formerly head of the Commercial Department of the Foreign Office.*]

ARSENIC IN BEER.

From the Article (5 pages) by OTTO HEHNER, *Past President of the Society of Public Analysts.*

Adulteration.— . . . . . . In 1899 an obscure illness broke out in Dublin resembling the tropical disease "beri-beri." Early in August 1900 a rapid increase in the number of "peripheral neuritis" cases, closely resembling the Dublin beri-beri cases, was observed in Lancashire. It soon became clear that there was some connexion between the drinking of beer and the obscure disease; and Dr Reynolds, Physician to the Royal Manchester Infirmary, on investigation found arsenic in the suspected beer. This discovery caused an immense amount of attention to be given to beer. Traces of arsenic were found in samples from many parts of the country; but the greatest amounts of arsenic (up to 1 grain per gallon, calculated as arsenious acid, has been met with) were traced to the employment in a number of breweries of some starch-glucose that had been manufactured by the aid of very impure, arsenical, sulphuric acid by a Lancashire firm. Numerous deaths were due to the drinking of such arsenicated beer. It was also soon discovered that much of the malt used by brewers contained appreciable traces of arsenic, and in hops small traces were found. Malt and hops probably derive their arsenic from the fact that both are prepared by an antiquated process, the drying of both being effected by the gases and fumes which are given off by coke or anthracite fires, these fumes passing through the malt and hop, which absorb therefrom any arsenic that may be associated with the pyrites occurring in all coal. Sulphur, often arsenical, is also sprinkled upon the fires to lighten the colour of malt or hop. All the worst cases, however, of arsenic in beer were due to arsenical glucose, prepared by one firm. The use of glucose is perfectly legal, the brewer having the statutory right to brew from whatever material he may deem proper, as long as he pays due revenue to the State—the revenue being levied upon the basis of the specific gravity of the wort, every liquor under the Customs and Inland Revenue Act, 1885, being defined as beer, "which is made or sold as a description of beer, or as a substitute for beer, which on analysis of a sample thereof shall be found to contain more than 2 per cent. of proof spirit." The fact that arsenic was liable to occur in glucose and in beer was known as long ago as 1878, but no quantities in any way resembling those met with in the recent cases had previously been observed. Since the use of glucose has become general in brewing, other industrial users of sugar, principally the manufacturers of sweetmeats, jams, and syrups, have also largely employed glucose, mainly for the cheapening of their products. . . . .

[*An evil which has been latterly the object of much attention on the part of the British Legislature—the adulteration of food, &c.—is discussed and explained in fullest detail in this Article.*]

For the titles of some of the Articles on Industries, see p. 102 of this review.

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OCEAN GIANTS.

From the Article (16 pages) by B. W. GINSBURG, LL.D., Secretary of the Royal Statistical Society of Great Britain, and W. B. DUFFIELD, Barrister-at-Law.

Steamship Lines.— . . . . . . The *Teutonic* and *Majestic*, introduced in 1889 and 1890, were the first merchant ships constructed with a view to their use as possible auxiliaries to the Royal Navy. The former was present, armed with eight quick-firing guns, at the naval inspection by the German Emperor in 1889. With the launch of the second *Oceanic* in January 1899 the company's record was still further enhanced. This gigantic ship, built by Messrs Harland and Wolff, is of 17,247 tons and 28,000 h.p., her length over all being 705 feet. She has accommodation for 350 saloon, 250 intermediate, and 1000 steerage passengers, besides a crew of 450. She also is an armed cruiser, as are the *Majestic* and the *Teutonic*, both close upon 10,000 tons. The White Star Line was from 1877 regularly employed under contract with the British Government to carry the American mails from Liverpool and Queenstown to New York. Besides this weekly mail and passenger service, a fleet of twin-screw cargo vessels maintained a subsidiary service between Liverpool and New York. These vessels were especially designed for the conveyance of cattle and horses. The company's s.s. *Celtic*, a vessel of 20,880 tons, gross register, when launched (in 1901) the largest vessel afloat, was usually employed in this trade, but she also on occasion carried the mails. A slightly larger sister, the *Cedric*, was provided for the same work in 1902. . . . .

[*See also* SHIP, SHIPBUILDING, SHIPPING, FREE PORTS, SEAMANSHIP, SEAMEN (LAW RELATING TO), SEA-LAWS, LLOYD'S.]

THE COMMERCIAL IMPORTANCE OF GEOGRAPHY.

From the Article (18 pages) by H. R. MILL, D.Sc., F.R.G.S.

Geography.— . . . . . . The discovery and production of commodities require a knowledge of the distribution of geological formations for mineral products, of the natural distribution, life-conditions, and cultivation or breeding of plants and animals, and of the labour market. Attention must also be paid to the artificial restrictions of political geography, to the legislative restrictions bearing on labour and trade as imposed in different countries, and, above all, to the incessant fluctuations of the economic conditions of supply and demand and the combination of capitalists or workers which affect the market. The term "applied geography" has been employed to designate commercial geography, the fact being that every aspect of scientific geography may be applied to practical purposes, including the purposes of trade. . . . .

[*To the trader of to-day success largely depends on a close study of geography and a geographical knowledge of the markets of all countries. In the Article* GEOGRAPHY, *and under the name of each country, information of great commercial importance is included.*]

THE STRUGGLES OF CAPITAL AND LABOUR.

From the Article (13 pages) by Hon. CARROLL D. WRIGHT, U.S. Commissioner of Labour.

Trade Unions.— . . . . . . The principal object of every trade union is to protect the trade interests of its members, and to strengthen their position in bargaining with their employers with regard to the conditions under which they work. The chief means by which they seek to attain these objects (apart from political methods, such as the promotion of legislation or of administrative

Objects and methods.

action by public authorities) are twofold: viz., the support of members when engaged in a collective dispute with employers by the payment of "dispute" benefit, and the insurance of members against loss from want of work by the payment of "unemployed" benefit, so as to enable them to refuse any terms of employment inferior to those recognized by the trade union. All trade unions in one form or another provide "dispute" benefit, but a separate "unemployed" benefit is by no means universal, though, except in certain groups of trades, it is usual among more powerful and well-established societies. Thus in the mining, clothing, and even many branches of the building trade, comparatively little is spent by trade unions on "unemployed" benefit, while, on the other hand, in the metal, engineering, shipbuilding, printing, and other trades, a large proportion of the total expenditure is devoted to this object (see *Statistics* below). . . . .

Statistics.

The statistics of trade unions are very complete for recent years, but for earlier years the records are so fragmentary that it is impossible to give exact figures showing the total growth of trade unions over a long period. The following table, based on the statistics published by the Board of Trade, shows the number and membership of trade unions in the United Kingdom for each of the nine years 1892–1900 :—

	Number of Unions.	Membership of Unions.
1892 . . .	1208	1,502,358
1893 . . .	1255	1,479,417
1894 . . .	1295	1,436,300
1895 . . .	1311	1,407,836
1896 . . .	1317	1,494,465
1897 . . .	1307	1,613,998
1898 . . .	1267	1,648,732
1899 . . .	1302	1,800,869
1900 . . .	1272	1,905,116

. . . .

[*The four-page Article* MARKET, *by* WYNNARD HOOPER, *M.A., contains a valuable review of the modern Money Market.*]

THE FUTURE OF CO-OPERATION.

From the Article (3 pages) by ANEURIN WILLIAMS.

Co-operative Societies.— . . . . . . We constantly hear that co-operative production is a failure. There have no doubt been many failures, especially of big experiments attempted among men totally unprepared. But many of the failures counted were not truly co-operative. At the present day consumers' production is successful beyond all question, while the net growth of producers' associations in recent years has been marked both in number and importance. These two forms of production best illustrate the two rival theories which divide British co-operation, and between whose partisans the conflict has at times been sharp. The consumers' theory maintains that all profit on price is abstracted from the consumer and must be returned to him; while to him should also belong all capital and control, subject to such regulations as the State and the Trade Unions enforce. This theory is fully exemplified in the English Wholesale Society, and in one of the corn mills, which employ workmen, whether co-operators or not, for wages only, and admit no individual, but only co-operative societies, to membership. It is also exemplified by the great majority of the stores, though in their case the employee may become a member in his capacity as a consumer. The co-partnership theory, on the other hand, maintains that the workers actually employed in any industry, whether distributive or productive, should be partners with those who find the capital and those who buy the produce, and should share with them profit, responsibilities, and control.

Rival theories.

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The consumers' party contend that societies of producers make a profit out of the consumers, and thus are never truly co-operative, while as they multiply they must compete against each other. The co-partnership party answer that labour at least helps to make the profit, and that competition, as yet almost insignificant between their societies, can be avoided by federating them (a process long ago begun) for buying and selling in common, and for other common purposes, while leaving each the control and responsibility of its own affairs. They further advocate the eventual federation of the productive wing of co-operation with the distributive wing for settling prices and all matters in which their interests might conflict. In this way they say the co-operative system may extend indefinitely without sacrificing either individual responsibility and freedom, or a general unity and control, so far as these are necessary to secure the common interest. On the other hand they hold that the opposing system tends more and more to centralization and bureaucracy, and divorces the individual workman from all personal interest in his work and from any control over its conditions. They contend, moreover, that, in spite of the great advantages consumers' production has in its command of a market and of abundant capital, only a small part of industry can ever be carried on by associations of the persons who actually consume the produce. . . . .

[BALANCE OF TRADE, TRADE MARKS, TRADE ORGANISATION, *are important commercial articles in the Tenth Edition.*]

TWO STANDARDS OR ONE?

From the Article (2 pages) *by* Major LEONARD DARWIN.

Bimetallism.—From mediæval times until the beginning of the 19th century coins of both gold and silver were current in the leading commercial countries of Europe, ordinances being issued from time to time by the Governments concerned with the object of fixing their relative value, or more correctly, their equivalency as legal tender. Both metals were, moreover, as a rule coined at the mints without restrictions as to quantity. England was the first to abandon this system and to adopt gold as the sole standard of value; at a later date the United States followed this example; and, in 1873, the Latin Union, of which France was the leading nation, took the first steps in the same direction. From this date monometallism prevailed all over Europe, silver coins in gold-using countries becoming mere tokens. The object of bimetallists is to revert to a monetary system somewhat similar to that which prevailed in the Latin Union before 1873, though it is generally admitted that the proposed Bimetallic Union must cover a wider area. Bimetallism is, in fact, a currency system which would establish a right on the part of the debtor to discharge his liabilities at his option in either of the two metals at a ratio fixed by law. For this system to be successful it is obvious that a fixed ratio or value between the metals must be maintained. From 1820 to 1870 the ratio of the value of silver to gold (taking annual averages) appears to have varied between the limits of 15·19 to 1 and 15·95 to 1—a variation of about 5 per cent. during a period of 50 years, and a variation which bimetallists accounted for by the inefficiency of the currency ordinances. Between 1872 and 1900 the ratio varied between the limits of 15·65 to 1 and 35·03 to 1—a variation of about 124 per cent. in a period of twenty-eight years—a period during which there were no currency ordinances with regard to the relative value at which metals could be freely coined. This increase of instability is the true basis of the bimetallic controversy, a controversy which may be divided under three heads: (1) Was the change in the stability of the relative value of the metals due to the changes in the monetary systems of the world, or was it due to the increased production of silver, or to other similar causes? (2) Would it be possible to establish a fixed ratio of value between the metals by the enactment of bimetallic laws? (3) Would such a change in the English monetary system, if practicable, be on the whole advantageous? . . . .

[*The Currency problems are dealt with at great length in the article* MONEY *in Vol.* 16.]

NEGOTIABLE INSTRUMENTS.

From the Articles (41 pages) *by* Right Hon. LEONARD COURTNEY, *M.P., P.C.,* Sir J. R. PAGET, *Bart., K.C.,* R. H. INGLIS PALGRAVE, *and* THOMAS L. GREENE.

Banking.— . . . . . . It has been claimed that custom of the Stock Exchange to treat a security as fully negotiable is, apart from statute, the only trustworthy test. It would probably be more correct to say, that in order to attain the status of full negotiability a security must be on its face negotiable and recognized as such by the mercantile community of the United Kingdom at large. Negotiability in the country of its origin is no evidence of negotiability in England (*Picker* v. *The London and County Bank*, 18 Q. B. D. 515). It has been contended on the authority of *Crouch* v. *Crédit Foncier*, L. R. 8 Q. B. 374, that, with regard to English securities, at any rate, evidence of modern mercantile usage was inadmissible to affix the character of negotiability to an instrument not recognized as negotiable by statute, or by that ancient custom of merchants which has been adopted by the common law. The judgment of Mr Justice Kennedy in the *Bechuanaland Exploration Company* v. *The London Trading Bank, Limited*, 1898, 2 Q. B. 658, seems, however, to show conclusively that this view is not in accordance with the decision of the House of Lords in *Goodwin* v. *Robarts*, 1 Ap. Cases, 476, and that when once a security, whether English or foreign, is universally recognized and treated by the mercantile community of Great Britain as negotiable, the fact of its acceptance as such being recent is no bar to its admission into the category of negotiable securities.

Bankers are affected or protected in certain cases by special legislation annexing to particular classes of documents incidents usually found in connexion with strictly negotiable instruments. Thus, section 95 of the Bills of Exchange Act, 1882, extends to dividend warrants the provisions of the Act regarding crossed cheques; and sec. 17 of the Revenue Act, 1883, makes the same provisions applicable to "any document issued by a customer of any banker, and intended to enable any person or body corporate to obtain payment from such banker of the sum of money mentioned in such document." . . . . . . Unless the documents are in themselves negotiable, either as being cheques within the terms of the Bills of Exchange Act, or as having acquired negotiability by statute or custom, they remain non-negotiable and even non-transferable instruments, and must be treated as such. The class of document, now so common, in which payment is made conditional on an annexed receipt being signed, dated, and presented with the order for payment, or in which payment is made dependent on presentation within a specified period, are not cheques or negotiable instruments, though included in the above legislation. . . . . .

[*The Article* BILLS OF EXCHANGE *in the Tenth Edition is by* M. D. CHALMERS, *C.S.I., who has published the text-book on the subject.*]

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THE EMPEROR AUGUSTUS AS A PAWNBROKER.

From the Article (6 pages) *by* J. G. J. PENDEREL BRODHURST.

Pawnbroking.— . . . . . . Both Rome and Greece were as familiar with the operation of pawning as the modern poor all the world over; indeed, from the Roman jurisprudence most of the contemporary law on the subject is derived. The chief difference between Roman and English law is that under the former certain things, such as wearing apparel, furniture, and instruments of tillage, could not be pledged, whereas there is no such restriction in English legislation. The Emperor Augustus was himself an illustrious pawnbroker. He converted the surplus arising to the State from the confiscated property of criminals into a fund from which sums of money were lent, without interest, to those who could pledge valuables equal to double the amount borrowed. It was, indeed, in Italy, and in more modern times, that the pledge system which is now almost universal on the continent of Europe arose. In its origin that system was purely benevolent, the early *Monts de Piété* established by the authority of the Popes lending money to the poor only, without interest, on the sole condition of the advances being covered by the value of the pledges. This was virtually the Augustan system, but it is obvious that an institution which costs money to manage and derives no income from its operations must either limit its usefulness to the extent of the voluntary support it can command, or must come to a speedy end.

The pledge system.

. . . .

[BOOK-KEEPING, ACCOUNTANTS, COMMERCE, FINANCE, STOCK EXCHANGE, *are some of the headings under which Articles dealing with Commercial subjects will be found.*]

THE BEGINNINGS OF THE ZOLLVEREIN.

From the Article (5 pages) *by* F. W. TAUSSIG, *Ph.D., LL.D.*

Tariffs.— . . . . . . In 1818 Prussia adopted a tariff with much reduced duties, under the influence of the Liberal statesmen then still powerful in the Prussian Government. The excitement and opposition in Germany to the Prussian tariff led to customs legislation by the other German states, some smaller states joining Prussia, while the southern states endeavoured to form independent customs unions. Finally, by gradual steps between 1831 and 1834, the complete Zollverein was formed, notwithstanding popular opposition. All the German states formed a customs union, with free trade between them, except so far as differing internal taxes in the several states made some modifications necessary. The customs revenue was divided among the several states in proportion to population. The tariff of the Zollverein was, in essentials, the Prussian tariff of 1818, and was moderate as compared with most of the separate tariffs previously existing. Within the Zollverein, after 1834, there was an almost unceasing struggle between the Protectionist and Free Trade parties, Prussia supporting in the main a Liberal policy, while the South German states supported a Protectionist policy. The trend of the tariff policy of the Zollverein for some time after 1834 was towards protection; partly because the specific duties of 1818 became proportionately heavier as manufactured commodities fell in price, partly because some actual changes in rates were made in response to the demands of the Protectionist states. In 1853 a treaty between the Zollverein and Austria brought about reciprocal reductions of duty between these two parties. After 1860 a change towards a more liberal policy was brought about by the efforts of Prussia, which concluded independently a commercial treaty with France, forcing on the other members of the Zollverein the alternative of either parting company with Prussia or of joining her in her relations with France. The second alternative was accepted, largely because Austria did not vigorously support the South German states, and in 1865 the Zollverein as a whole concluded a commercial treaty with France, bringing about important reductions of duty. . . . .

French treaty and low tariff, 1865.

[*The Article* TARIFFS, *from which the above extract is taken, reviews the history of the Tariff War which threatens to become for England a problem of the most vital Commercial nature.*]

Commercial men are proverbially hard up for time. The practical exigencies of a business take up the whole of the day, and exhaust the whole vitality of an active man. Numerous people have to be interviewed, persuaded, contradicted, informed, dismissed; the intricacies of each successive transaction absorb the whole of a man's thoughts, and indeed keep them at a high tension. What is the result of this? If you ask a silk merchant to tell you how much raw silk is produced in Japan in a year, he will either prevaricate or else make a bold conjecture—unless he frankly confesses that he is far too busy to devote time to general information of this kind. Possibly he will even tell you that such information is valueless.

In this he is mistaken. The most successful business enterprises are to-day conducted on a system under which the strictest attention is paid to the personal details that make up the character of a firm; but in addition to this, the fullest information concerning every branch of the subject into which a man's trade takes him is accumulated and becomes an effective engine of success in matters of competition, in specific negotiations which require a complete grasp of the subject, and in all the numerous and complicated relations of commercial life. We have heard a great deal, and are bound to hear a great deal more about foreign competition. The thoughtless man who reposes idly upon the soft bed of tradition comforts himself with the reflexion that we have always been a great commercial nation, but his comfort rests on an insecure basis. Germany and America have not only knocked at the door of many a lively concern, they have opened the door and come right into the middle of the world's market. Whether a man sell silk, wheat, beer, cotton, paper, sewing-machines, furniture, china, grocery, cutlery, or leather goods, his first object should be to ascertain all that is to be known, not only in his own country, but in every other country, of the conditions of his trade. For the silk merchant the world should be accurately divided into places in which silk is grown and in which silk is not grown, in which it is woven and in which it is not woven, in which it is dyed and in which it is not dyed, in which it is sold and in which it is not sold; that is to say, the world should be the map of a man's own trade, in which he may find the minutest circumstance or condition recorded. There are two ways of attaining this object. The one is costly, for it involves the institution of a bureau of information, and information only, in every office. The other way is to acquire the Thirty-five Volumes of the *Encyclopædia Britannica.*

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To say the *Encyclopædia Britannica* is

A Book for Men of Business

is not saying too much. There is no side of Commercial life which is not dwelt on in its pages. To the East India Merchant, to the Shipowner, to the Banker, to the Company Director, to the Iron-master, to every business man, the Tenth Edition gives information which each must have, and which it would be difficult for him to obtain in so readable a form from any other source.

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SOCIAL & POLITICAL

Bon Dieu, I say is it not hard that the fateful rush of the great Imperial struggle can't take place without affecting a poor little harmless girl of eighteen, who is occupied in billing and cooing, or working muslin collars in Russell Square?—THACKERAY.'

Of all societies since the Roman Republic, and not even excepting the Roman Republic, England has been the most emphatically and essentially political.—JOHN MORLEY.

N his brilliant Prefatory Essay to Vol. 28 of the Tenth Edition of the Encyclopædia Britannica, Sir Leslie Stephen puts his finger upon what, it must be conceded by all, is at once the most satisfactory and astonishing feature in human society to-day. If we have not yet attained the millennium, we have reached a period of mutual tolerance: tolerance in religious matters, tolerance in political matters, and tolerance in social matters. Interesting and valuable as every portion of the Encyclopædia Britannica is for the man who thinks, there is probably no portion of the stupendous work so vital and so human in its interest as that which deals with the varied aspects of human society to-day. Into this social and political section of the pamphlet some slight attempt has been made to gather extracts on every branch of human science. But varied as these paragraphs are, they give only a vague idea of the wealth of information contained in the articles. There is no question of political moment, no social or racial problem, no ramification of the vast charitable organizations forming such a feature of the modern world, which is not adequately treated in its pages. Indeed the very length of the articles might defeat their object of instruction, were it not that the addition of an Index far larger than any ever before undertaken, makes the Tenth Edition the most perfect as it is the most exhaustive political and social hand-book ever offered the public.

"PLAYING TO THE GALLERY."

From the Fourteen-page *Prefatory Essay on* RECENT POLITICAL PROGRESS *by* EDWARD DICEY, *C.B.*

. . . . . . It is sometimes said that all these questions of what—for lack of any exactly equivalent English term—may be best called *la haute politique*, do not interest the labouring classes, who under the general democratic tendencies of our time are gradually acquiring more and more political influence, and who in England, the United States, and the British self-governing colonies are practically supreme whenever they choose to exert their power. But this, though true in regard to a bygone time, is at the best only a half-truth nowadays. The spread of education, the wider, even if superficial, acquaintance with foreign affairs created by the cheap press, the abolition of caste privileges, and the tone of modern thought, have all tended to render the civilized and self-governing nations of the world more homogeneous than they were wont to be. The sentiment of national pride is far more widely diffused, if not absolutely keener, nowadays than it was in bygone times. In consequence, popular opinion, whether intelligent or otherwise, plays a far larger part in public affairs than it did formerly. The result of this changed state of things must be to render the ideas which underlie Imperialism more intelligible and acceptable to the classes who live by manual labour than they were when the 19th century came into existence. Moreover, these classes are beginning to realize that their personal interests as wage-earners may be indirectly affected by questions of foreign or Imperial policy. Still, it may be fully admitted that, as a rule, questions which directly affect the sons of toil are those most calculated to enlist their sympathies. The so-called governing classes have already begun to take this fact into account, and to modify their tactics accordingly. During the discussions on parliamentary reform Lord Palmerston is reported to have replied to a friend, who remarked that in the reformed Parliament Ministers and members were much of the same class as they had been in the pre-Reform era: "Yes, the actors will be the same: the only difference will be, that they will play to the gallery instead of to the stalls." Careful students of politics will probably agree that the legislation of the last twenty-five years has been largely influenced by what may fairly be described as "playing to the gallery." This tendency has been most marked in Great Britain, owing to the simple fact that the working-man's vote is, electorally speaking, more powerful there than it is elsewhere. The remedial legislation of Mr Gladstone with regard to Ireland, whether sound or unsound, was a distinct violation of the rights of property and of freedom of contract. The system of County Councils, by which local authority was transferred from the hands of the landed gentry to Boards elected in the main by artisans and labourers; the appointment of a Government Commission authorized to determine the rent payable on any Irish estate by an arbitrary process, instead of by open competition; the substitution of State administration in domains hitherto left open to private enterprise; the preference shown in all fiscal arrangements for direct, as opposed to indirect, taxation; the interference with the liquor trade; the agitation against ground rents and in favour of the principle of betterment; the obligation placed upon railway companies to provide working-men's trains at arbitrarily fixed rates; the measures adopted to

The labouring classes.

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provide improved dwellings for the working classes at rentals lower than could be obtained by leaving the construction of such dwellings to be regulated by the laws of supply and demand; the attempt to suppress usury by regulating the rate of interest the lender might be entitled to charge and the borrower might be bound to pay—may be cited as a few of the measures which would never have been adopted if the working-class vote had not become of paramount importance. . . . . . .

[BALLOT, CONGRESS, DIPLOMATICS, FEUDALISM, ALLOTMENTS, LOCAL GOVERNMENT, MUNICIPALITY, PARLIAMENT, PRIMROSE LEAGUE, REGISTRATION OF VOTERS, VETO, *are among the various Articles which are devoted to political subjects in the Tenth Edition.*]

THE RATE WE LIVE AT.

From the Article (20 pages) by the Rev. CANON BARNETT; E. AVES; Mrs. ISABELLA M. HOLMES; C. E. TROUP; J. E. SQUIRE, *M.D., D.P.H., M.R.C.P.*; T. GREENWOOD; A. SHERWELL.

Social Progress.— . . . . . . An observer suddenly lifted from 1880 and planted in a town of to-day would perhaps first of all be struck by the pace at which things are done. Railway passenger traffic has greatly increased, electric trains and trams have been started, people run to and fro about the country and travel daily to their homes. It is computed by Sir J. Wolfe Barry that 1,000,000 persons enter and leave London daily by railways alone. In one hour 1228 vehicles and 5660 pedestrians pass through the Strand. In 1879 the metropolitan tram-cars ran 7,701,999 miles and carried 56,041,767 passengers. In 1900 they ran 31,679,397 miles and carried 337,058,869 passengers. It is impossible to show the absolute growth in London local railway traffic, as the great railways do not furnish returns for their suburban traffic separately from their main line and provincial traffic, but the distinctively metropolitan railways in 1879 carried 112,801,531 passengers, and in 1900 they carried 192,437,707 passengers. In 1882 there were 7,987,877 workmen's tickets issued by railways having London termini, and in 1899 there were 41,831,657 so issued, *i.e.*, a daily average of 134,507. The London General Omnibus Company carried 135,131,902 passengers in 1894, and 195,692,126 in 1899; the Road Car Company carried 44,610,320 in 1894 and 65,326,150 in 1899. The Metropolitan Police in 1881 issued licences for 5800 two-wheel cabs and 3847 four-wheel cabs, and in 1900 for 7531 two-wheel and 3721 four-wheel cabs. . . . . . .

[*To the science of human society and the remarkable features of the social progress of to-day an interesting Article—*SOCIOLOGY*—is devoted in the Tenth Edition of the Encyclopædia Britannica.*]

EDUCATION AND SUICIDE.

From the Article (1 page) by HENRY HARVEY LITTLEJOHN, *M.B., B.Sc.*

Suicide.— . . . . . . The reason of the high suicide-rate in some countries as compared with others, and the causes of its progressive increase, are not easily determined. Various explanations have been offered, such as the influence of climate, the comparative prevalence of insanity, and the proportionate consumption of alcoholic drinks, but none satisfactorily accounts for the facts. It may, however, be remarked that suicide is much more common amongst Protestant than amongst Roman Catholic communities, while Jews have a smaller suicide-rate than Roman Catholics. A point of considerable interest is the increase of suicide in relation to the advance of elementary education. Ogle states that suicide is more common among the educated than the illiterate classes. It is also more prevalent in urban than in rural districts. A curious feature in large towns is the sudden outbreak of self-destruction which sometimes occurs, and which has led to its being described as epidemic. In such cases force of example and imitation undoubtedly play a considerable part, as it is well recognized that both these forces exert an influence not only in causing suicide, but also in suggesting the method, time, and place for the act. No age above five years is exempted from furnishing its quota of suicidal deaths, although self-destruction between five and ten years is very rare. Above this age the proportion of suicides increases at each period, the maximum being reached between fifty-five and sixty-five. Among females there is a greater relative prevalence at earlier age periods than among males. The modes of suicide are found to vary very slightly in different countries. Hanging is most common amongst males; then drowning, injuries from fire-arms, stabs and cuts, poison, and precipitation from heights. Amongst females, drowning comes first, while poison and hanging are more frequent than other methods entailing effusion of blood and disfigurement of the person. . . . .

[*The legal aspect of self-destruction is given in the Article* FELO DE SE.]

A MUCH-NEEDED REFORM.

From the Article (3½ pages) by SHIRLEY F. MURPHY, *M.D.*

Slaughter-House.— . . . . . . Belfast may be cited as an illustration of a town in which a public slaughter-house has been provided, and in which there are no private slaughter-houses, but which receives a quantity of meat from private slaughter-houses erected beyond the boundaries of the city. The outcome of these difficulties is that the power of local authorities to provide public slaughter-houses has been but sparingly used. There is no law requiring that meat shall be inspected before sale for human food, hence there is no obligation upon butchers to make use of public establishments for the slaughter of their cattle. This, indeed, is the position of some of the Continental slaughter-houses; but the increasing strictness of the laws as to meat-inspection, and especially in requiring that all animals shall be inspected at the time of slaughter, is making the use of public slaughter-houses obligatory. . . .

Regulations.

Such a law now exists in Belgium, where it has served as a model to other countries. An Imperial German law of 1900 extends to all parts of that country the same requirement, and enacts that "neat cattle, swine, sheep, goats, horses, and dogs, the meat of which is intended to be used for food for man, shall be subjected to an official inspection both before and after slaughter." . . . . .

[*For an interesting account of the Meat Market and Butchers' Guilds in Ancient Rome, see* ABBATOIR *in Vol. I.*]

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Metic 22 131b; 22 255b; 17 527a.

Here is a word which affords an instance of the constant adoption by English writers of foreign terms. Any one reading a treatise on civil government might be confronted with a comparison between the full citizen and the metic. What is a metic? he would ask himself. Let him consult the Index, and on his turning up the references he will read :—

. . . . . . By manumission the Athenian slave became in relation to the State a metic, in relation to his master a client. . . . .

. . . . . . These settlers (μετοίκοι, 'metics') had none of the political privileges of the Athenian citizen, and they could not acquire landed property. . . . .

. . . . . . The Attic *demos*, largely at least, though doubtless not wholly, arose out of the mixed settlers who had come together in the city, answering to the μετοίκοι of later times. . . . . .

THE "SMALL MASTER" EVIL.

From the Article (1½ pages) by DAVID SCHLOSS, *M.A.*:

Sweating System.— . . . . . . The common idea, that the "sweater" is an unscrupulous tyrant, who fulfils no useful function, and who makes enormous profits, has no counterpart in fact. Whatever may have been the case in earlier days, before the internecine competition of the "middlemen" had time to produce its inevitable effects upon the position of these sub-employers, it may now be considered to be beyond dispute that the small master ("sub-contractor," "garret-master," "fogger," &c.) usually works at least as hard as his employés, and that his gains are, as a rule, no more than a fair return for the work which he performs—work which in many instances consists in doing some difficult part of the job, and in all cases in organizing the labour engaged. So far as concerns the "manufacturer," by whom the "sweater" is employed, and who is clearly the *causa causans* of "the sweating system," for him the practice of getting his work done in outside shops is undoubtedly convenient, especially in localities where rent is high, because he is saved the expense of providing accommodation for those who do his work. He is also free from restrictions as to the subdivision of labour and the employment of a certain class of workpeople which the sentiment of the regular factory workers would impose upon him. The regular tailor, for example, thinks that no one who has not, by a lengthy period of tuition, acquired the capacity to make a coat "right out" ought to be allowed to enter the tailoring trade. But in the workshop of the sub-contractor the work is split up into fractions, each of which is soon learned, so that it becomes possible to introduce into the trade persons possessing no previous training, and generally willing to work for wages far lower than those to which the regular tailors consider themselves entitled, and which, so long as they are not exposed to the competition of these outsiders, they are usually able to secure. . . . .

[EMPLOYERS' LIABILITY, CHILDREN (CRUELTY TO), WAGES, *are Articles which deal with aspects of the Sweating System evils.*]

THE ALIEN PROBLEM.

From the Article (20 pages) by the Rev. CANON BARNETT, E. AVES, HOLMES, C. E. TROUP, SQUIRE, T. GREENWOOD, A. SHERWELL.

Social Progress.— . . . . . . It is impossible to glance over our period of social history and take no notice of the agitations about the "unemployed," which culminated in riots in Trafalgar Square, and caused the formation of a Mansion House relief fund, which was itself a fruitful source of discontent, and ended in a controversy as to the causes and remedies which has not yet ceased. The very fact of industrial progress tends to throw out of work those unfitted by health, education, or character to reach the high level required; and one sign of the times is the congestion, in certain quarters, of men who cannot or will not earn a living. Many schemes have been suggested, such as that carried out by the Salvation Army, for giving such men work in a labour colony; but as yet no scheme offers a solution. The unemployed are always with us, subsisting on the charity of free meals, shelters, and casual wards, for which they feel no gratitude, and ready at any time of pressure to become the centre of an agitation.

The unemployed and the alien.

The demand for a check upon the immigration of aliens grows in volume, but has not borne fruit, though it has been fostered with vigour. As a matter of fact, England has fewer aliens than any other nation. In France 2·7 per cent. of the population are foreigners, in Switzerland 9·6 per cent., but in England only 0·68 per cent. In 1899 the excess of emigration from the United Kingdom over immigration into the kingdom was 21,925, and in 1894 it was 28,016. . . . .

[*The legal side of the Alien Question is discussed in the Articles* ALIEN, ALLEGIANCE, *and* INTERNATIONAL LAW.]

ENEMIES OF ALL GOVERNMENT.

From the Article (9 pages) by THOMAS KIRKUP, *M.A.*

Socialism.— . . . . . . We might divide Anarchists, very roughly, into three classes. There are, first, those who use the Universal Negative: they feel sure that political government as it is, is bad, and they would destroy all government; they are Nihilists. This is the class associated with deeds of violence. There are, next, those who would have Communism established without a central political government, but under a public control, exercised by local councils till the time come when public opinion will be a sufficient control by itself. William Godwin taught a similar doctrine in 1793. William Morris, when he left the Social Democrats, was drifting in this direction. There are, finally, the extreme Individualists, described in Carlyle's words as content with "Anarchy plus the street constable," and regarding the intervention of the State as a necessary evil, to be reduced to the smallest possible dimensions. These views are represented by Mr Herbert Spencer and Mr Auberon Herbert. They regard private property as the stronghold of individual liberty. They are rather an academic than a popular party. The really powerful party among the Anarchists is the middle party, disowning mere violence, and yet refusing to work in parliamentary harness, seeing no virtue in political government, even when representative. . . . . .

[*See Extract from the Article* NIHILISM *on page* 159 *of this Pamphlet, and the Article* FENIANS.]

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For the titles of some of the articles on Colonies and Colonising, see p. 85.

A FRANKLY SOCIALISTIC LAW.

From the Article (3 pages) by J. E. DAVIS.

Poor Laws.—The chief difficulty in understanding the English poor law arises from the fact that there are three authorities, each of them able to alter its administration fundamentally. Few statutes relating to the poor law have been repealed, and the need of consolidation is very generally admitted. The poor law, however, is not only the creation of statutes passed by Parliament; it is also controlled by the subordinate jurisdiction of the Local Government Board, which in virtue of various Acts has the power to issue Orders. The Board possesses great facility for consolidating its Orders, and probably all that is here possible has been done. A third source of authority is the local board of guardians, which, within the discretion allowed to it by Statutes and Orders, can so variously administer the law that it is difficult to understand how procedure so fundamentally different can be based on one and the same law. This elasticity, admirable or mischievous, as we choose to regard it, is the most characteristic feature of the English poor-law system, and a supplementary note in illustration of its working during the closing years of the 19th century will give a better idea of the public policy in this respect than an elaborate analysis of statutes. . . . .

[*The* OLD AGE PENSIONS *question is discussed at length in the Article under that heading.*]

BACTERIA BEDS.

From the Article (2 pages) by SANTO CRIMP, M.Inst.C.E.

Sewage — . . . . . . The artificial filters are now generally called bacteria beds; although filters have been in constant use in some cases, as for instance at Wimbledon, for a great number of years. The first filters constructed at these works were made in 1876, and were about 7000 yards in extent. With the growth of population additions have been made of at least five times that area. One of the original beds was used for crude sewage, but the mineral matter choked it completely, and experience pointed to the necessity of clarifying the sewage before filtration. Whether the treatment should be in open or in closed tanks, or whether chemicals should be added, is at present much debated; but seeing that ordinary sewage contains one ton of suspended mineral matter in each million gallons, it is clear that if this is not removed before filtration, it will be retained in the filters and ultimately choke them, as happened at Wimbledon. At the present time the common cesspool is being resuscitated and improved under the name of a septic tank. In this the disintegration of the suspended matter is brought about by anaërobic organisms, and the liquid in passing slowly through the tank absorbs most of the gases due to the breaking down of the organic matter. There is no oxidation at this stage. The liquid is next passed through artificial filters, of which there are many types. . . .

[*An Article of nearly four pages on the subject of* CREMATION *is contributed to the Tenth Edition by* SIR HENRY THOMPSON, *the great Surgeon, who has identified himself with the movement in England.* VENTILATION, CEMETERY, HYGIENE, PUBLIC HEALTH, SMOKE ABATEMENT, WATER SUPPLY, *are some of the other Articles which deal with the subject of the preservation of the health of great centres of population.*]

THE JEWISH BOGEY IN ENGLAND.

From the Article (10 pages) by LUCIEN WOLF.

Anti-Semitism — . . . . . . While the main activity of anti-Semitism has manifested itself in Germany, Russia, Rumania, Austria-Hungary, and France, its vibratory influences have been felt in other countries when conditions favourable to its extension have presented themselves. In England more than one attempt to acclimatize the doctrines of Marr and Treitschke has been made. The circumstance that at the time of the rise of German anti-Semitism a premier of Hebrew race, Lord Beaconsfield, was in power first suggested the Jewish bogey to English political extremists. The Eastern Crisis of 1876-78, which was regarded by the Liberal party as primarily a struggle between Christianity, as represented by Russia, and a degrading Semitism, as represented by Turkey, accentuated the anti-Jewish feeling, owing to the anti-Russian attitude adopted by the Government. Violent expression to the ancient prejudices against the Jews was given by Sir J. G. Tollemache Sinclair (*A Defence of Russia*, 1877). Mr T. P. O'Connor, in a life of Lord Beaconsfield (1878), pictured him as the instrument of the Jewish people, "moulding the whole policy of Christendom to Jewish aims." Professor Goldwin Smith, in several articles in the *Nineteenth Century* (1878, 1881, and 1882), sought to synthetize the growing anti-Jewish feeling by adopting the nationalist theories of the German anti-Semites. This movement did not fail to find an equivocal response in the speeches of some of the leading Liberal statesmen; but on the country generally it produced no effect. It was revived when the persecutions in Russia threatened England with a great influx of Polish Jews, whose mode of life was calculated to lower the standard of living in the industries in which they were employed. All danger was, however, averted by the Jewish communal authorities, who, by dint of great pecuniary sacrifices and an excellent international organization, managed to control the immigration. In 1883 Herr Stoecker visited London, but received a very unflattering reception. . . . .

Great Britain, &c.

[*In the Prefatory Essay to Vol. 28 entitled* THE GROWTH OF TOLERATION, SIR LESLIE STEPHEN, *K.C.B., discusses the astonishing increase of tolerance in religious, political, and social matters.*]

THE FUTURE OF ENGLISH WOMEN.

From the Article (6½ pages) by LADY JEUNE.

Women. . . . . . . What was to be the fate and future of women? Their natural career, that of marriage, was impossible to many in a country where there were half a million more women than men, and the difficulties which beset them in their struggle for an outlet and a profession were gigantic. A few women saw the moment, the difficulty, and the way of salvation; and Miss Martineau, Miss Cobbe, Mrs Garrett Anderson, Miss Buss, Miss Florence Nightingale, with others too numerous to mention, demonstrated what women could do, and by their example gave encouragement to others. The woman's movement in America found its echo in England, and the influence of American thought and life on the United Kingdom largely contributed to promote the higher education and the spirit of independence which have enabled women to attain their present position. The facilities of communication, the increasing power of the press, the cheapening of literature, could not fail to

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produce great changes, especially in a society where so preponderating an element existed of superfluous women. The narrow, dreary existence which custom had assigned to them was no longer possible, and the example of their sisters in America gave a precedent for their encouragement. The standard of work that women have set before them is a high one, and they have not been contented to attain less than their ideal, and it is that which has given the movement its reality and strength; moreover, English women are physically a strong class, and strenuous as has been the battle, they have had that great reserve to fall back upon. By their use of athletics and exercise they have preserved that standard of health without which no one can do really good work. It is too soon yet to judge what the effect of work and the expenditure of energy will be on the coming generation, or whether the mothers of the future will produce the like healthy offspring of their progenitors. One effect is that women of the higher working classes marry less early, and have fewer children; and another result of the emancipation they enjoy, coupled with the fact that they need not depend on marriage as their only career, is a disinclination among many to marry.

. . . .

[*No one could be more fitted for the task of writing on woman's social position in the present and future than* LADY JEUNE, *whose Magazine Articles on the subjects have for years attracted much attention in England.*]

COUNTERVAILING DUTIES.

From the Article (8 pages) *by* Sir ROBERT GIFFEN, *K.C.B., F.R.S., &c. &c.*

Taxation. . . . . . . A great deal has been said as to taxes termed "countervailing duties," which are called for in order to defend free trade itself against the protectionist bounties of foreign Governments. Such duties are obviously taxes outside the limits to be considered in a question of taxation proper. They are to be imposed for other purposes than revenue. As to the claim for them that they will restore free trade conditions by nullifying the foreign bounties which have caused a disturbance of trade, this is really in the nature of a political reason. A country which is so devoted to free trade that it not only practises free trade itself but endeavours to convert others by nullifying their protectionist measures as far as it can, even with immediate loss to itself, departs from the guidance of self-interest so far; but its political action may be justifiable in the long run by other considerations. It seems right to point out, however, that countervailing duties, which are really differential duties of a special kind, are not the good expedient they are supposed to be for nullifying foreign bounties. . . . .

[INCOME TAX, NATIONAL DEBT, POLITICAL ECONOMY, NATIONAL DEBT CONVERSION, STAMP REVENUES, TITHES, *are the titles of some Articles in the Encyclopædia Britannica which are devoted to taxation in its varied forms.*]

IS THE MODERN HOSPITAL A SOCIAL EVIL?

From the Article (32 pages) *by* C. S. LOCH, *Secretary of the Charity Organization Society, London.*

Charity and Charities.— . . . . . . Open-handed hospitality always creates mendicants. This is what the hospitals offer in the out-patient and casualty departments, and they have created a class of hospital mendicants. The cases are quickly dealt with, without inquiry and without regard to home conditions. The medical man in the hospital does not co-operate with any fellow-workers outside the hospital. Where his physic or advice ceases to operate his usefulness ceases. He regards no conditions of morality. In a large number of cases drink or vice is the cause of application, and the cure of the patient is dependent on moral conditions; but he returns home, drinks, and may beat his wife, and then on another visit to the hospital he will again be physicked, and so on. The man is not even referred to the poor-law infirmary for relief. Nor are conditions of home sanitation regarded. One cause of constant sickness is thus entirely overlooked, while drugs, otherwise unnecessary, are constantly given at the hospital. The hospitals are thus large isolated relief stations which are creating a new kind of pauperism. So far as the patients can pay—and many can do so—the general practitioners, to whom they would otherwise go, are deprived of their gains. Still worse is it when the hospital itself charges a fee in its out-patient department. The relief is then claimed even more absolutely as a right, and the general practitioners are still further injured. The doctors, as a medical staff, are not only medical men, but, whether they recognize the fact or not, they are also almsgivers or almoners; what they give is relief. Yet few or none of them have ever been trained for that work, and consequently they do not realize how very advantageous, even for the cure of their own patients, would be a thorough treatment of each case both at the hospital and outside it. Nor can they understand how their methods at present protract sickness and promote habitual dependence. Were this side of their work studied by them in any way they would be the first, probably, to press upon the governors of their hospitals the necessity for a change. Unfortunately, at present the governors are themselves untrained, and to finance the hospital and to make it a good institution is their sole object. Hospitals, however, are, after all, only a part of the general administration of charity, though as they are now managed they have seldom any systematic connexion with that administration. . . . .

Hospitals.

[*The history of Charity is traced in this remarkable article from the 8th century* B.C. *through its natural and legislative changes to the present day.* FRIENDLY SOCIETIES, PENSIONS, SAVINGS BANKS, ANNUITIES, STATE PENSIONS, HOSPITALS, BUILDING SOCIETIES *are other Articles in the Tenth Edition dealing with the subject of public organized charity.*]

Establishment or Disestablishment?

No question affecting the Church in England has aroused, or is likely to arouse, greater public interest than this of the suggested disendowment of the State Church. The political meaning of England both to-day and in the past can only be fully understood by a study of the history of the Church and its relation to the State. It is on such an issue as this that the Tenth Edition of the *Encyclopædia Britannica* affords information comprehensive enough to enable the student to form a judgment, when he reads such articles as ESTABLISHMENT OR DISESTABLISHMENT, CHURCH OF ENGLAND, &c.

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THE COLOUR QUESTION.

From the Article (3½ pages) by Professor A. H. KEANE, F.R.G.S., and W. H. BALDWIN, Jr.

Negro.— . . . . . . The absolute poverty of the negro after his freedom was responsible for the one-room cabin. Slavery had made family life uncertain or impossible, and this had led to inconstancy, and to a lack of appreciation of the importance of virtue. In these respects there has been a marked improvement. The two-room cabin, making possible separation of the sexes, the ownership of lands, and the general impulse incited in the people for bettering their position, have brought a higher standard of life and morals. The most encouraging result of opportunity and development is the growing differentiation of classes among negroes, even in small communities, and the fact, now clearly defined, that the industrious and property-holding class of the negro population represents the general tendency of the race. "In slavery days marriage or cohabitation was entered upon very early, and the first generation of freemen did the same. The second generation is postponing marriage to better its condition" (Du Bois). In 1890 there were 9 native white prisoners in gaol to every 10,000 of the white population, and 33 negroes to every 10,000 of the negro population; but as negroes are committed for petty offences in much greater proportion than the whites, the comparison is unfair. It is undoubtedly true, however, that the proportion of negro criminals is in excess of the whites.

Lynching. Lynching, or the practice of punishment for crimes or offences by unauthorized persons without a legal trial, has been practised against the negro to an alarming extent. A grouping of the lynchings of negroes for five years, with the alleged causes, gives the figures shown in Table D.

TABLE D.

Year	Murder.	Rape.	Other Causes.	Total.
1896	24	31	31	86
1897	55	22	46	123
1898	47	16	39	102
1899	23	11	56	90
1900	30	16	57	103
Total	179	96	229	504

The lynching may occur from any cause, and any crime by a negro is considered in some communities as an inter-racial crime. The punishment is due to race antipathy and the desire to protect the white race. The rape of the negro by the white, when it occurs, is condoned, and is seldom punished. Throughout the four years of the Civil War, when the negroes were left in charge of the homes of the whites, there is no record of a single murder that could be called an outrage on the part of the negro. The health of the negro race suffered by the free license that followed the restraint in slavery. The introduction of civilized vices into the uncivilized negroes induced excesses, and the lack of self-control brought crime and disease in its path. The birth-rate among the negroes is high, but the death-rate, especially in the cities, is far in excess of that of the whites. This is due to improper food, clothing, excesses, and ignorance of the care of infants.

By Federal constitutional amendment the negro was given the right of franchise. In the former slave states, where the negro predominates, five states—Mississippi, South Carolina, North Carolina, Louisiana, and Alabama—have adopted educational and property qualifications in their constitutions, which practically disfranchise the majority of the negroes. The Constitutional Convention of Virginia (1902) adopted the same qualification. The attitude of the white population varies in proportion to the number of negroes. Where there is no fear of negro domination, as in the North and West, the relationship is simple. But in some Southern states where the negro largely predominates (in some counties in the ratio of 12 to 1), the relations between the negro and the white are very complex. The universal sentiment of the Southern white is that the negro shall neither dominate politically nor shall he have social recognition. He is encouraged, however, to secure a reasonable education, and is respected in proportion to his good citizenship. More trades are open to him in the South than elsewhere, and his labour in agriculture, personal service, and the more laborious trades is appreciated.

Legal disfranchisement.

Statistics of the progress of the negro in education are not complete, but all indicate a wonderfully rapid progress in the elements of education. During slavery it was generally held throughout the South to be a crime to teach negroes to read and write. Schools existed, however, to some extent, for the free negroes, and the U.S. censuses of 1850 and 1860 reported a considerable number of adult "Free Coloured People" in the Southern states who could read and write, 25,490 in 1850, and 29,864 in 1860.

Education.

[*See the fifteen-page Article SLAVERY in Vol. 22.*]

IS EMIGRATION AN ADVANTAGE TO A NATION?

From the Article (5½ pages) by the late Prof. RICHMOND MAYO-SMITH, Ph.D.

Migration.— . . . . . . There are two views with regard to emigration: one unfavourable, viz., that it is a drain on population, reducing its economic strength and disturbing social and political relations; the second looking upon it as a relief from over-population and a congested labour market. As a matter of fact, emigration has not succeeded in diminishing the population of Europe, which, on the contrary, doubled during the 19th century. The one great exception is Ireland, where population has been reduced from 8,175,124 in 1841 to 4,531,051 in 1899. From 1851 to 1899 the total emigration from Ireland was 3,796,131, or 68·6 per cent. of the average population. Emigration, by carrying off the young men and women, has also reduced the Irish marriage- and birth-rates, which are the lowest in Europe. But hitherto the countries of strongest emigration (England, Germany, &c.) have shown practically undiminished birth- and marriage-rates and a steady growth in population.

The intensity of emigration is measured not by the absolute number of emigrants, but by the number of emigrants to the total population. Its effect is shown by comparing the number of emigrants with the excess of births over deaths per 1000 of the population. This is shown in the following table (1892):—

	Excess of Births over Deaths per 1000 Inhabitants.	Emigrants per 1000 Inhabitants.
Great Britain and Ireland	10·54	5·51
England and Wales	11·50	4.56
Scotland	12·17	5·74
Ireland	3·04	11·39
Germany	11·6	2·23
Switzerland	8·7	2·64
Sweden	9·1	6·87
Norway	11·9	8·53
Denmark	10·1	4·76
Italy	10·1	3·53
France	0·5	0·14

It will be observed that, with the exception of Ireland, wherever there is a heavy emigration, there is at the same time a considerable excess of births over deaths, *i.e.*, natural increase more than makes up for the loss by emigration. Even taking Great Britain and Ireland together, the loss by emigration per annum has not been very large.

EMIGRATION AND IMMIGRATION.

Balance of Emigration and Immigration..—Even in the case of emigration from Europe to countries beyond the seas there is some return movement. Emigrants who have been successful in business return in order to end their days in the old country. Those who have not succeeded return in order to be cared for by friends and relatives, or simply from home-sickness. Thus, for Great Britain and Ireland, while the emigration of persons of British and Irish origin was, in 1899, 146,362, the immigration of persons of the same category was 100,246, leaving a net emigration of only 46,116. In the United States statistics we cannot distinguish in the outgoing passenger movement, emigrants from other persons. But if for a period of ten years we take the total inward passenger movement and substract from it the total out-

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For the titles of some of the articles on subjects of popular interest in the Tenth Edition, see p. 188.

ward passenger movement, we ought to have the net immigration. By this method we arrive at the conclusion that while the gross immigration during the ten years 1881–90 was 5,246,613, the net immigration was only 4,417,337. . . . .

Even in particular districts where emigration is heavy, the loss is made up by births. For instance, in 1891 the emigration from the provinces of West Prussia and Posen was extraordinarily heavy—10·9 and 10·4 per mille respectively—but the excess of births over deaths was 19·6 per mille. . . . .

[POPULATION, MALTHUS, CENSUS, STATISTICS, MARRIAGE, FAMINES, *are the titles of some Articles touching on the question of over-population.*]

THE BIRTH OF A NATIONAL MOVEMENT.

From the Article (2½ pages) by Sir DONALD MACKENZIE WALLACE, *K.C.I.E., K.C.V.O.*

Nihilism.— . . . . . . In material and moral progress Russia had remained behind the other European nations, and the educated classes felt, after the humiliation of the Crimean war, that the reactionary régime of the Emperor Nicholas must be replaced by a series of drastic reforms. With the impulsiveness of youth and the recklessness of inexperience, the students went in this direction much farther than their elders, and their reforming zeal naturally took an academic, pseudo-scientific form. Having learned the rudiments of positivism, they conceived the idea that Russia had outlived the religious and metaphysical stages of human development, and was ready to enter on the positivist stage. She ought, therefore, to throw aside all religious and metaphysical conceptions, and to regulate her intellectual, social, and political life by the pure light of natural science. Among the antiquated institutions which had to be abolished as obstructions to real progress were religion, family life, private property, and centralized administration. Religion was to be replaced by the exact sciences, family life by free love, private property by collectivism, and centralized administration by a federation of independent communes. . . .

[*See the Articles* ALEXANDER II., *and* ALEXANDER III. *and* RUSSIA (*Recent History*) *by the same author.*]

SHOULD THE DEATH SENTENCE BE ABOLISHED?

From the Article (5 pages) by W. F. CRAIES, *Editor of "Statutes relating to Criminal Law."*

Capital Punishment.— . . . . . . With the mitigation of the law as to punishment the agitations against capital punishment have lost their force. But many Continental and American writers, and some English writers and associations, advocate the total abolition of the death punishment. . . . . . . The ultimate argument of the opponents is that society has no right to take the life of any one of its members on any ground. But they also object to capital punishment: (1) on religious grounds, because it may deprive the sinner of his full time for repentance; (2) on medical grounds, because homicide is usually if not always evidence of mental disease or irresponsibility; (3) on utilitarian grounds, because capital punishment is not really deterrent, and is actually inflicted in so few instances for murder that criminals discount the risks of undergoing it; (4) on legal grounds, *i.e.*, that the sentence being irrevocable and the evidence often circumstantial only, there is great risk of gross injustice in executing a person convicted of murder; (5) on moral grounds, that the punishment does not fit the case nor carry out the true function of punishment, namely, the reformation of the offender. . . . .

The question of abolition.

[PRISON DISCIPLINE, CRIMINAL LAW, ANTHROPOMETRY, CRIME, POLICE, *are but some of the Articles in the Encyclopædia Britannica, which are of interest from the Criminologist's point of view.*]

WHAT TECHNICAL EDUCATION SHOULD BE.

From the Article (7 pages) by Sir PHILIP MAGNUS *and* A. T. HADLEY, *President of Yale University.*

Technical Education.— . . . . . . The subjects entering into the school curriculum may be, and in certain cases should be, selected with reference to their applicability to certain callings, but they should be so taught as to become instrumental in the formation of mental habits and the development of character, the mere knowledge or skill acquired being of secondary importance. In the teaching of science there has been, during the last few years, a marked change in method. Formerly the usefulness of the knowledge to be derived from the study of nature gave to physical science its chief claim to a place in the school curriculum, but it is now held that the real value of the study consists in the opportunities it affords of exercising the pupil in accurate observation, and of developing resourcefulness and powers of independent thought and reasoning. Whilst the opinion in favour of postponing as long as circumstances permit all specialized instruction has become of late years more pronounced, there has been a growing tendency, not only in England but also on the Continent and in the United States, to associate technical teaching more closely with workshop practice. The professional or trade teaching, which is supplementary to primary or secondary education, is more practical and less easily distinguishable by the ordinary observer from the training of the factory or workshop. This tendency is shown in all grades of technical education. The technical institutes established in London and in the large English manufacturing towns, attended mainly by evening students, are provided not only with expensive laboratory apparatus for the teaching of applied science, but also with tools and machines for the teaching of technology; and some of the departments of these schools are equipped so as to resemble a small factory. . . . .

[KINDERGARTEN, INDUSTRIAL AND REFORMATORY SCHOOLS, POLYTECHNICS, UNIVERSITIES, *and* EDUCATION *are a few of the Articles in the Tenth Edition dealing with the subject of National Education.*]

It has been quite impossible to give in the space of this section an adequately representative selection from the articles on social and political matters in the *Encyclopædia Britannica.* For example, no mention has been made of the elaborate review of political development which forms a part of the article devoted to each country; and the social side of each nation's life is just as fully dealt with. But the extracts given, and the variety of their subjects, will make it possible for the reader to exercise his imagination so that he may form some estimate of how comprehensive the Tenth Edition is in the treatment of social and political questions.

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THE last extract of this section will have shown you how the Educational problems of to-day are handled in the Tenth Edition. But the *Encyclopædia Britannica* does much more than that for you. It gives you the whole **HISTORY OF EDUCATION,** and of each and every question of social import affecting Education. Thus you can read in its pages of :—

Ancient Greek Education,
Ancient Roman Education,
Early Christian Education,
Education in the Middle Ages,
English Schools,
Schools in France,
Schools in Russia,
Grammar Schools,
Education at the Renaissance,
Plato's Academy,
The Athenæum,
Laws relating to Education,
London Schools,
Schools in Germany,
Schools for the Blind,
Scientific Schools,

and the history of Education throughout Europe.

You can read, too, of those men in all ages and countries who have served the cause of Education :—

Quintilian,
Clement,
Origen,
Tertullian,
Augustine,
Alcuin,
Bede,
John Scotus Erigena,
Gerhard Groot,
Thomas à Kempis,
Sturm,
Roger Ascham,
Comenius,
Erasmus,
Arnauld,
Pascal,
August Hermann Francke,
Pestalozzi,
Froebel,
Jacotot,
Thomas Arnold,
Horace Mann,
Montaigne,
John Locke.

Then, too, the *Encyclopædia Britannica* gives you the whole **HISTORY OF PHILANTHROPY AND REFORM.** You can read in its volumes the history of :—

Christian Missions,
Jesuit System of Missions,
Methodist Missions,
Moravian Missions,
Reformatories,
Almshouses,
Temperance Societies,
Parliamentary Reform,
Abolitionists,
Prison Discipline Society,
English Poorhouses,
Foundling Hospitals,
Liquor Laws,
Prostitution,
Slave Trade,
Good Templars,
Poor Laws,
Prison Reform,

and the life-story of those who have devoted themselves to Reform :—

Francis Xavier,
John Eliot,
Robert Morrison,
William Carey,
Adoniram Judson,
John Williams,
Henry Martyn,
Robert Moffat,
Elizabeth Fry,
Stephen Girard,
George Peabody,
John Howard,
Theodor Fliedner,
Wilberforce,
William Lloyd Garrison,
Wendell Phillips,
John Greenleaf Whittier,
Abraham Lincoln,

and many others whose names are made glorious by the charity of their lives.

And just as fully will the Political Student be enabled to study in the pages of the Tenth Edition subjects of **NATIONAL FINANCE, TAXATION,** and **GOVERNMENT** :—

Ancient Forms of Finance,
Taxation in Athens,
English Exchequer,
English Stamp Act,
Corn Laws,
South Sea Bubble,
John Law's Mississippi Scheme,
Income Tax,
History of Taxation in England,
Taxes Direct and Indirect,
National Debt,
Wages,
Liberty of the Press,
Martial Law,
Revenue,
Monarchy,
Socialism,
Nihilism,
Fenianism,
Aristocracy,
Democracy,
Republic,
Budget,
Parliament.

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RACES & CREEDS

A man that is of judgment and understanding shall sometimes hear ignorant men differ, and know well within himself that those which so differ mean one thing, and yet they themselves would never agree.—BACON.

N the subjoined extracts an attempt is made to give the reader some slight idea of the comprehensive manner in which Ethnology and the comparative study of Races and Creeds are dealt with in the Tenth Edition of the Encyclopædia Britannica. The selections have been made deliberately from the scientific and historical view of religion rather than the modern and controversial view, for there has arisen within the limits of the nineteenth century a school of thought which has brought into prominence the truth to which Lord Bacon so happily gives expression in the above quotation, that there is a deep-rooted brotherhood of man which checks the cruelties of dogmatic religion and the bitterness of racial antipathies, and teaches us, as has been said by a modern poet, that "God's music shall not finish with one tune."

The Tenth Edition provides articles on every branch of Ethnological Research, and no religion, however obscure, fails to receive analysis in its pages. Does the reader wish to trace the astonishing similarity of savage myths, so puzzling a problem to Ethnologists, the articles MYTHOLOGY and COSMOGONY give him the fullest details. Do the early beginnings of Animism among savages interest him, he has but to turn to the articles under that title to find its history traced in all lands. The heroic religion of Scandinavia, the fetichism of the negro and the Polynesian, Taboo-belief, animal worship, Sun-worship, the anthropomorphism of classic Mythology and the divine dynasties of ancient Egypt and Assyria are placed before him in exhaustive articles. Nor has the controversial side of religion been neglected. The Reformation, the history of the Roman Catholic Church, Popedom, the policy of the Vatican, the questions of doctrine which divide the ecclesiastical world are all discussed each under its own heading. Space could not be found to give examples of a fourth part of the articles dealing with religious subjects. Those given below are but a mere fraction, and the kindred subjects of archæological research, Palæontology, and Manners and Customs are just as fully detailed as the racial and doctrinal characteristics of the inhabitants of every portion of the globe.

THE GROWTH OF BELIEF IN A GOD.

From the Article (13 pages) by ÉLIE RECLUS.

Ethnography.— . . . . . . Controversies have been waged upon this question—"Do any tribes exist which have no kind of religion?" What made the dispute interminable, and of little profit, is the fact that the disputants attached different meanings to the same word. Reports of missionaries were quoted, some affirming, some denying. Thus facts have been brought forward to prove either that the Russian peasants are very religious or very irreligious. The truth is that the religion of these simple-minded people is so mixed up with superstition that rigorous critics who maintain that superstition is the reverse of religion, as much as of morals, have no difficulty in proving that many of these country folks practise real shamanism under the cloak of Greek Christianity. But ethnologists are not expected to be either severe or indulgent; they have to give a definition covering the ground occupied by all religions, be they true or false. Their definition of the word, although a philosophic one, falls in with that which many theologians have formulated. "Religion is the feeling which falls upon man in the presence of the unknown." Man fears and must fear the unknown, because the unknown may be dangerous and terrible, because the infinite is hidden in the unknown. Man personifies the Unknown; when his mind is strongly excited, he cannot do otherwise. And that personification he seeks to propitiate.

As regards superstitions, while moralists and social reformers consider them to be baneful weeds which it is their duty to dig out and destroy, ethnologists consider them as wrecks of former beliefs, over which the waves of many centuries have washed. The symbol has remained, but its significance is gone; the comprehension, never more than superficial, became lost, but the reverence was great, and survived. Thus, paganism underlies Christianity still, especially among ignorant rustics, a fact which the word pagan itself illustrates (*pagani*, country folk).

Classic paganism, the product of a late idealism, was in its theory too philosophic to be understood except by the few; it propounded the worship of the sun and æther as male principles and sources of light, heat, and life. It had succeeded to the so-called chthonic religions, of which Professor Bachofen (*Mutterrecht*) and M. Jules Baissac (*Les Origines de la Religion*) have been the exponents. The Earth Mother was then the centre of stellar, solar, and lunar deities, lunar deities especially, the moon being often considered as of the male sex. From internal evidence, it may be supposed that these religions were devised under the influence of agricultural practices, when the idea of paternal filiation began to be slowly evolved from the maternal. And the chthonic religions were themselves in their origin an innovation upon animal worship, which corresponded to the rise of Totemism (M'Lennan, Spencer) upon Shamanism, and the still ruder Fetichism. The lowest religions are characterized by their containing the greatest proportion of magic and the least of science and morality. In that stage, the invisible powers of witchcraft and sorcery are made to explain whatever is not understood,—even the fact of natural death, the explanation of which one would have thought to be the first to loom on these dark intelligences. . . . .

Superstition or prehistoric religion still survives even in the heart of civilized Europe, where many of its bizarre and grotesque practices are to be found similar to those prevailing in China, and in the dark corners of Africa and Australia. How is this universal prevalence to be explained? Does it prove that the communications between distant members of the human family were more active than it is commonly supposed that they were? Does it prove that we did all come from the same stock? Or is the true explanation this, that the similarity of effects results from the similarity of causes, and that men evolved analogous beliefs because they have analogous minds? . . .

[*The origin of savage worship, and the history of the world's myths are discussed in the articles* MYTHOLOGY, RELIGIONS, TOTEMISM, ANIMISM, FETICHISM, *&c.*]

The Tenth Edition contains articles on Zionism, Babism, Tract Society, Quakers, Baptists, Salvation Army, and all sects and branches of religious activity.

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For the titles of some of the articles on Social Subjects in the Tenth Edition, see p. 150.

A REMNANT OF NEOLITHIC MAN.

From Article by Captain F. BRINKLEY, *Tokyo, Japan.*

Ainu.— . . . . . . The Ainu are somewhat taller than the Japanese, stoutly built, well proportioned; with dark-brown eyes, high cheek-bones, short broad noses and faces lacking length. Naturally very hairy and never shaving after a certain age, they have full beards and moustaches. Men and women alike cut their hair level with the shoulders at the sides of the head, but trim it semicircularly behind. The women tattoo their mouths, arms, and sometimes their foreheads, using for colour the smut deposited on a pot hung over a fire of birch bark. Their original dress is a robe spun from the bark of the elm tree. It has long sleeves, reaches nearly to the feet, is folded round the body and tied with a girdle of the same material. Females wear also an under garment of Japanese cloth. In winter, the skins of animals are worn, with leggings of deer-skin and boots made from the skin of dogs or salmon. Both sexes are fond of ear-rings, which are said to have been made of grape-vine in former times, but are now purchased from the Japanese, as also are bead necklaces, which the women prize highly. Their food is meat, whenever they can procure it—the flesh of the bear, the fox, the wolf, the badger, the ox, or the horse—fish, fowl, millet, vegetables, herbs, and roots. They never eat raw fish or flesh, but always either boil or roast it. Their habitations are reed-thatched huts, the largest 20 feet square, without partitions and having a fireplace in the centre. There is no chimney, but only a hole at the angle of the roof; there is one window on the eastern side and there are two doors. Public buildings do not exist, whether in the shape of inn, meeting-place, or temple. The furniture of their dwellings is exceedingly scanty. They have no chairs, stools, or tables, but sit on the floor. . . . .

DOG-FACED MAN-EATERS.

From Article (82 pages) by late Sir WM. W. HUNTER, *K.C.S.I., C.I.E., LL.D., &c., &c.*

India.— . . . . . . Among the rudest fragments of mankind are the isolated Andaman islanders in the Bay of Bengal. The old Arab and European voyagers described them as dog-faced man-eaters. The English officers sent to the islands in 1855 to establish a settlement found themselves surrounded by quite naked cannibals of a ferocious type, who daubed themselves when festive with red earth, and mourned in a suit of olive-coloured mud. They used a noise like weeping to express friendship or joy, bore only names of common gender, which they received before birth; and their sole conception of a god was an evil spirit who spread disease. For five years they repulsed every effort at intercourse by showers of arrows; but the officers slowly brought them to a better frame of mind by building sheds near the settlement, where these poor beings might find shelter from the tropical rains, and receive medicines and food.

The Anamalai hills, in southern Madras, form the refuge of a whole series of broken tribes. Five hamlets of long-haired wild-looking Puliars live on jungle products, mice, or any small animals they can catch, and worship demons. Another clan, the Mundavars, shrink from contact with the outside world, and possess no fixed dwellings, but wander over the innermost hills with their cattle, sheltering themselves under little leaf-sheds, and seldom remaining in one spot more than a year. The thick-lipped small-bodied Kaders, "Lords of the Hills," are a remnant of a higher race. They file the front teeth of the upper jaw as a marriage ceremony, live by the chase, and wield some influence over the ruder forest-folk. These hills, now very thinly peopled, abound in the great stone monuments (kistvaens and dolmens) which the primitive tribes used for their dead. . . . .

[*The aboriginal races of mankind*, e.g., *the* AZTECS, *the* BUSHMEN *of* AUSTRALIA, *the* HILL-TRIBES *of* INDIA, BHILS, TODAS, KOTAS, *&c., the* TIERRA DEL FUEGIANS, *the* ESKIMO, *are all described in the Encyclopædia Britannica.*]

DOES MAN COME FROM A SINGLE STOCK?

From the Article (16 pages) by ED. BURNETT TYLOR, *LL.D., D.C.L., F.R.S.*

Anthropology.— . . . . . . The problem of ascertaining how the small number of races, distinct enough to be called primary, can have assumed their different types, has been for years the most disputed field of anthropology, the battle-ground of the rival schools of monogenists and polygenists. The one has claimed all mankind to be descended from one original stock, and generally from a single pair; the other has contended for the several primary races being separate species of independent origin. It is not merely as a question of natural history that the matter has been argued. Biblical authority has been appealed to, mostly on the side of the monogenists, as recording the descent of mankind from a single pair. (See, for example, Horne's *Introduction to the Scriptures;* the Speaker's Commentary, Gen. i.) On the other hand, however, the polygenists not less confidently claim passages from which they infer the existence of non-Adamite, as well as Adamite races of man. (See, for example, R. S. Poole, *Genesis of the Earth and Man.*) Nor have political considerations been without influence, as where, for instance, one American school of ethnologists have been thought to have formed, under the bias of a social system recognising slavery, their opinion that the Negro and the white man are of different species. (See Morton, *Crania Americana;* Nott and Gliddon, *Types of Mankind.*) Of the older school of scientific monogenists, Blumenbach and Prichard are eminent representatives, as is Quatrefages of the more modern. The great problem of the monogenist theory is to explain by what course of variation the so different races of man have arisen from a single stock. In ancient times little difficulty was felt in this, authorities such as Aristotle and Vitruvius seeing in climate and circumstance the natural cause of racial differences, the Ethiopian having been blackened by the tropical sun, &c. Later and closer observations, however, have shown such influences to be, at any rate, far slighter in amount and slower in operation than was once supposed. M. de Quatrefages brings forward (*Unité de l'Espèce Humaine*, Paris, 1861, ch. 13) his strongest arguments for the variability of races under change of climate, &c. (*action du milieu*), instancing the asserted alteration in complexion, constitution, and character of Negroes in America, and Englishmen in America and Australia. But although the reality of some such modification is not disputed, especially as to stature and constitution, its amount is not enough to upset the counter-proposition of the remarkable permanence of type displayed by races ages after they have been transported to climates extremely different from that of their former home. Moreover, physically different races, such as the Bushmen and Negroids in Africa, show no signs of approximation under the influence of the same climate; while, on the other hand, the coast tribes of Tierra del Fuego and forest tribes of tropical Brazil continue to resemble one another, in spite of extreme differences of climate and food. Mr Darwin, than whom no naturalist could be more competent to appraise the variation of a species, is moderate in his estimation of the changes produced on races of man by climate and mode of life within the range of history (*Descent of Man*, part i. ch. 4 and 7). The slightness and slowness of variation in human races having become known, a great difficulty of the monogenist theory was seen to lie in the shortness of the chronology with which it was formerly associated. . . . .

[*Every branch of the great human family has an article devoted to it in the Tenth Edition.*]

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For reproductions of plates from the First Edition of the Encyclopædia, published in 1768, see pp. 169, 172, and 185.

FIRE-WORSHIPPERS.

From the Article by A. FUHRER, *Ph.D.*

Parsis, or PARSEES.—The resident in Bombay who wanders to the Back Bay beach at sunset to inhale the fresh sea-breezes from Malabar Hill will there observe a congregation of the most interesting people of Asia. They are the Parsîs, the followers of Zarathustra, and the descendants of the ancient Persians who emigrated to India on the conquest of their country by the Arabs, about the year 720 A.D.

The men are well-formed, active, handsome, and intelligent. They have light olive complexions, a fine aquiline nose, bright black eyes, a well-turned chin, heavy arched eyebrows, thick sensual lips, and usually wear a light curling moustache. The women are delicate in frame, with small hands and feet, fair complexions, beautiful black eyes, finely arched eyebrows, and a luxurious profusion of long black hair, which they dress to perfection, and ornament with pearls and gems.

The Parsis are much more noble in their treatment of females than any other Asiatic race; they allow them to appear freely in public, and leave them the entire management of household affairs. They are proverbial for their benevolence, hospitality, and sociability. They are good scholars, and usually learn several languages—Gujarâtî, Hindûstânî, and English. The Parsis are notoriously fond of good living, and do not hesitate to spend their money freely for the best the market affords. They indulge in wines, but do not reach the vice of intoxication.

. . . .

[*The* ZEND-AVESTA *or original document of the religion of Zoroaster—the Parsee Bible—is the subject of a special Article in Vol.* 24.]

THE EARLIEST RELIGION OF MAN.

From the Article by A. C. OUGHTER LONIE, *Kinghorn, Fife.*

Animism.— . . . . . . So disease among the lower races is accounted for by possession by demons, who are often themselves human souls, and who enter the bodies of their victims, causing all kinds of illness, and especially those phenomena of convulsion and delirium in which the patient seems actually animated by a spirit not his own. Other events and accidents of life are in the same way accounted for among savages as the acts of the demons, good or evil, whom they believe to pervade the universe; and as these beings are, more often than not, conceived to be souls of deceased men, the consequent worship of divine Manes is the principal religion of the lower state of civilisation. The doctrine of object-souls, expanding into the general doctrine of spirits conveying influence through material objects, becomes the origin of Fetichism and idolatry. Spiritual beings, under a thousand names, are multiplied upon the earth; not only those guardian spirits and hurtful demons directly influencing the lives of men, but others, far more numerous, with varied functions to discharge in the economy of the external world. To the lower races all nature being animated nature, every brook and well, every rock and glade, is peopled by nature-spirits; while Heaven and Earth, Sun and Moon, Rain and Wind and Thunder, are either themselves adored, or personified in the character of mighty nature-gods, such as Zeus, Apollo, or Poseidon,—spiritual beings who are, as it were, the great animating souls of their special phenomena. Among the lower races, also, there appears in a rudimentary form that antagonism between a good and evil deity, which forms the fundamental idea of Zoroastrism and Manichæism. Lastly, the conception of a Supreme Deity appears at a very early stage of civilisation, whether one of the great nature-deities, such as Heaven or Sun, is raised to this royal pre-eminence, or whether a being of the nature of a soul of the world, like the Great Spirit of the North American Indians, is venerated as Creator and Lord of the universe. Then, by a natural evolution, Monotheism is established. . . .

[*The astonishing similarity of savage myths—so puzzling a problem to ethnologists—is treated in fullest detail by Mr Andrew Lang in his Article of* 23 *pages,* MYTHOLOGY.]

HINDU NONCONFORMISTS.

From Article by T. W. RHYS DAVIDS, *Ph.D., LL.D.*

Jains.— . . . . . . It is now certain that the Jain community was really even older than the time of the Buddha, and was reorganized by his contemporary the Mahâ Vîra, named Vaddhamâna. And it is also clear that the Jain views of life were, in the most important and essential respects, the exact reverse of the Buddhist views. The two orders, Buddhist and Jain, were not only, and from the first, independent, but directly opposed the one to the other. In philosophy the Jains are the most thorough-going supporters of the old animistic position. Nearly everything, according to them, has a soul within its outward visible shape—not only men and animals, but also all plants, and even particles of earth, and of water (when it is cold), and fire and wind. The Buddhist theory, as is well known, is put together without the hypothesis of "soul" at all. The word the Jains use for soul is *jîva*, which means life, and there is much analogy between many of the expressions they use and the view that the ultimate cells and atoms are all, in a more or less modified sense, alive. They regard good, and evil, and space as ultimate substances which come into direct contact with the minute souls in everything. And their best-known position in regard to the points most discussed in philosophy is *Syâd-vâda*, the doctrine that you may say "Yes" and at the same time "No" to everything. You can affirm the eternity of the world, for instance, from one point of view, and at the same time deny it from another; or, at different times and in different connexions, you may one day affirm it and another day deny it. . . . .

[*The history of English Nonconformity is fully treated in the Articles* ENGLAND, INDEPENDENTS, BAPTISTS, METHODISM, *and* QUAKERS. *See also Article entitled* OATH.]

The Article on ARYAN in Vol. 2 is by Professor Max Müller

RELIGION OF THE ESKIMOS.

From the Article (13 *pages*) *by* Professor C. P. TIELE, *University of Leyden.*

Religions.— . . . . . . The religion of the Eskimo (Esquimantsic, Ashkimeg, as their Redskin neighbours call them) or Innuyt (*i.e.*, "men," as they call themselves) should be clearly distinguished from those of the other American nations. Though some of their customs and notions resemble those of the latter, there are others, and it would seem the most important, which are of the same character as those prevailing among the Ural-Altaians and Mongols. Now, as they belong ethnically to the Hyperborœan or Arctic nations, who inhabit not only the extreme north of America from east to west, but also the islands between the two continents and besides a part of the east of Siberia, and as these Hyperborœans are physically akin to the Mongolian race, we might suppose that the American elements in the Eskimo religion have

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been borrowed, and that it must be considered to have been originally a member of the Ural-Altaic family. Their division of the world of spirits into those of the sea, the fire, the mountains, and the winds, with Torngarsuk (chief of spirits), the heaven-god, as the highest, and their belief in the magical power of their sorcerers, the Angekoks, do not differ from those which characterize the Ural-Altaic religions. At any rate the religion of the Eskimo is the connecting link between the latter and those of the American aborigines.

Other American religions. That all the other religions of North and South America are most closely allied is generally admitted, and is indeed beyond doubt. Several myths, like those of the sun-hero, of the moon-goddess, of the four brothers (the winds), are found in their characteristic American form among the most distant tribes of both continents. Some religious customs, scarcely less characteristic, such as the sweating bath, intended to cause a state of ecstasy, the ball-play, a kind of ordeal, the sorcery by means of the rattle, are all but generally practised. Fetichism and idolatry are much less developed among the Americans than among other uncivilized and semi-civilized races, but a marked tendency to gloomy rites and bloody self-torture is common to all.

. . . .

[*The aboriginal religions of America, that of the Redskins of North America, that of the Aztecs, Toltecs, and Nahuas, that of the inhabitants of the Antilles, and of the Muyscas in South America, &c., are all dealt with at length in the Tenth Edition.*]

THE LAND OF THE PHARAOHS.

From the Article (88 pages) by REGINALD STUART POOLE, LL.D., and STANLEY LANE POOLE, B.A.

Egypt.— . . . . . . Sun-worship was the primitive form of the Egyptian religion, perhaps even pre-Egyptian. The first development was the myth of Osiris, due to the importance of Thinis, just as the rise of Memphis put Ptah, an abstract idea of intellectual power, even before Ra. So the rise of Thebes introduced Amen, who was identified in the form Amen-ra with Ra, and as an intellectual principle placed before the physical solar powers. This argument derives great weight from the relative position given to the two groups, the solar divinities coming first, and from the circumstance that the religious reform under Dynasty XVIII. suppressed everything but material sun-worship, as though this had been the primitive belief of Egypt. M. de Rougé, in his examination of the Egyptian *Ritual*, comes to a similar but more definite result in treating of the mythological elements of the important seventeenth chapter. He traces the solar gods to Heliopolis, and considers the Osiris myth as probably derived from Abydos, and added at a later time. . . . . . .

. . . .

The worship of the Egyptian deities was public and private—that of the temples and that of the tombs. Every town had at least one temple dedicated to the chief divinity of the place, with certain associated gods, and usually, if not always, a living symbol in the form of a sacred animal supposed to be animated by the chief local divinity. The services were conducted by priests, and on occasions by the king, and by scribes, who sometimes formed a college and lived at the temples, the various duties of which required the services of learned men. It is probable that the common people had a very small share in the religious services, the most important of which took place in the smaller inner chambers, which could never have admitted many worshippers. The outer courts, and still more the great inclosures containing the whole group of temple-buildings, must, however, have been the chief public resort for business and pleasure. There were no other public buildings, or, apparently, market-places. Like the modern mosque, the temple must have been the chief centre of the population.

The worship in the tombs was not local. It was always connected with Osiris or a divinity of the same group, and had the intention of securing benefits for the deceased in the future state. It took place in the chapel of each tomb of the wealthy; and though properly the function of the family, whose members officiated, the inscriptions invite all passers-by, as they ascend or descend the Nile, overlooked by the sepulchral grottoes, to say a prayer for the welfare of the chief person there buried.

The sacrifices were of animals and vegetables, with libations of wine, and burning of incense. Human sacrifice seems to have been practised in early periods. The monuments do not mention it, but Manetho speaks of its having been abolished, at least at one place, by Amôsis, no doubt the first king of Dynasty XVIII. The reference is probably to some barbarous usage during the great war with the Shepherds. . . . .

[*For particulars as to the elaborate funeral rites of Ancient Egypt, see Articles* EMBALMING, MUMMY, FUNERAL RITES.]

MOHAMMEDAN SECTS.

From the Article (8 pages) by Prof. A. MULLER.

Sunnites or Shíʿites.— . . . . . . Mohammedans fall into the two great divisions of Sunnites and Shíʿites (Shíʿa), separated by such bitter hatred as belongs to two hostile religions, or such as some Catholic populations feel towards a Protestant. The Sunnites, who accept the orthodox tradition (*Sunna*) as well as the Koran as a source of theologico-juristic doctrines, predominate in Arabia, the Turkish empire, the north of Africa, Turkestan, Afghanistan, and the Mohammedan parts of India and the east of Asia; the Shíʿites, whose origin has been explained in MOHAMMEDANISM (vol. xvi. pp. 564, 568, 592), have their main seat in Persia, where their confession is the state religion, but are also scattered over the whole sphere of Islam, especially in India and the regions bordering on Persia, except among the nomad Tartars, who are all nominally Sunnite. Even in Turkey there are many native Shíʿites, generally men of the upper classes, and often men in high office. The Shíʿites are less numerous and less important than the Sunnites, but on the whole may amount to 20 millions. . . . . .

[*The history of the Moslem religion is exhaustively given in the Article of 60 pages, entitled* MOHAMMEDANISM, *contributed by the famous scholar* Professor THEODOR NÖLDEKE.]

THE COSMIC EGG AND CREATIVE MYTHS.

From the Article (2 pages) by Rev. T. KELLY CHEYNE, D.D., of Oriel College, Oxford.

Cosmogony.— . . . . . . The peculiar expression, "the wind of Elohim was hovering," suggests different comparisons; thus, on a far lower stage of religious progress, the Polynesians often describe the heaven-and-air-god Tangaloa as a bird hovering over the waters (Waitz, vi. 241). In the earliest form of the narrative in Gen. i. it may have been "the bird of Elohim"; "wind" seems

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to be an interpretation. Another peculiar form of expression is the creation of the light before the sun (v. 3), which may be supposed to be paralleled by similar expressions elsewhere. The Egyptian god Thoth, the demiurge, is said to have "given the world light when all was darkness, and there was no sun"; and the Orphic light-god Phanes is anterior to the sun. . . . .

The Egyptians have left us no ancient cosmogonical system, though speculation was early rife among them. They appear to have had three great creative deities. Ptah, "the opener" (of the world egg?), was *probably* the god of the cosmic fire, who prepared matter for Amen-Ra to organize. But it was to Ra that the honour of creation was chiefly ascribed (see the unsurpassable hymn in *Records of the Past*, ii. 129–136)—to Ra, *i.e.*, the sun-god, as the people supposed, or the *anima mundi*, as the priests. . . .

We hasten on to the Aryan nations of the East. The Iranian parallels to the early chapters of Genesis have been greatly exaggerated. The only really valuable ones are those contained in the Avesta, which, though the date of its final redaction is uncertain, is probably in the main earlier than the return of the Jews from Babylon. The cosmogonical parallels are (1) the ascription of creation to the will of a supernatural deity, and (2) the ideal perfection attributed to the newly created world. Yet even here some deduction is necessary. For apparently the world is produced out of pre-existent matter, according to Genesis (see above); out of nothing according to the Avesta. And though Ahura-mazda (Ormuzd) is generally described in the Avesta as the sole creator, there is an ancient passage (Yasna, ch. xxx.) in which a good and an evil spirit are spoken of as joint-creators. Still, in the period of Darius and Xerxes (to which the first Hebrew cosmogony in its final form probably belongs) we have the best possible evidence for the sole creatorship of Ahura-mazda, for the great cuneiform inscription at Nakshi-i-Rustam describes him as "the great God of gods, who made heaven and earth, and made men," and similar language occurs in the royal inscriptions at Elvend, Van, and Persepolis. . . .

[*The theories of creation adopted by the races of the world are detailed in the above Article and under separate titles, e.g.*, *BABYLONIA, POLYNESIA, CHINA, INDIA, &c.*]

OUR HEATHEN ANCESTORS.

From the Article (2 pages) by JAMES MACDONALD, LL.D., Glasgow.

Druidism. . . . . . . According to Stukeley, Stonehenge was the cathedral of the archdruid of all Britain, and Avebury with its avenues had been originally constructed in the form of a circle with a serpent attached to it,—the circle being regarded as the symbol of the Supreme Being, and the serpent of the divine Son. Dolmens or cromlechs were transformed into altars, and even the menhir or stone pillar, and the rocking-stone, were pressed into the service of the druidical priesthood. In the neighbourhood of the circles, as well as on the tops of mountains, may be seen cairns surmounted each by a flat stone, on which Druid fires were lighted. Over their countrymen the authority of the Druids was almost unbounded, continuing to assert itself long after the order had passed away. With Druidism every unexplained custom and almost every relic of Celtic antiquity were held to be connected, and the superstitions that still linger in the ancient homes of the Celtic race were set down as derived from the same source. Its decadence is attributed by these writers to the hostility of the Romans. Ardent lovers of their country as well as of liberty, the Druids, it is asserted, were the uncompromising foes of Roman rule in the west. Hence sprang the orders issued for their suppression by Claudius, to which reference is made both by Pliny and Suetonius. In the end, Rome proved too strong for Druidism, and the political power of its priesthood was soon broken, especially in Gaul and South Britain. Some, among whom Herbert is prominent, maintain that, after the destruction of pagan Druidism as a system, the order was revived as a corrupt form of Christianity, in which the truths of the latter were largely mixed up with the rites of Mithras, the sun-god of the Persians. This hypothesis, to which its supporters have given the name of neo-Druidism, has already been noticed in the article CELTIC LITERATURE (vol. v. p. 318). . . . .

[*The legend of the mistletoe in Northern Mythology is related in the article ÆSIR.*]

SAVAGE OBJECTS OF WORSHIP.

From Article (1 page) by WALTER HEPWORTH.

Fetichism. . . . . . . Religions have not, as yet, been scientifically classified in anything like a final manner. Even the most rigorous of minds would hardly assert that the time has yet arrived for such a classification. But it is possible, even now, to collect roughly those beliefs which, whether still existing among savages and uneducated people of all classes or traceable only among the records of the past, bear a general resemblance to each other, and to give a general name marking that resemblance. Such a name we have in "fetichism." The word *feitiço*, corresponding to our "fetich," seems to have been first applied by Portuguese traders on the west coast of Africa to savage objects of worship, which were noticed from their resemblance to the talismans and charms common in Europe, and popular with sailors and travellers above all men.

In Purchas's *Pilgrimage* (1614) is a chapter translated from a Dutch author relating to the customs and rites of the negroes of Guinea, in which *fetissos* and *fetisseros*, or priests, are frequently mentioned. "When the king will sacrifice to *fetisso*, he commands the *fetissero* to enquire of a tree whereto he ascribeth Divinity, what he will demand;" . . . . The word fetich was, however, first used in a general sense by a thoughtful scholar of the 18th century, the president Charles de Brosses, who, in his work *Du Culte des Dieux Fétiches*, strung a number of facts relating to savages on a theory tracing fetichism in Egyptian and classic mythology and in modern life. Comte, the French philosopher, gave great currency to the term by employing it to characterize what he regarded as a great and necessary stage in the theological development of humanity,—a state "plus ou moins prononcé, mais ordinairement très durable, de pur fétichism, constamment characterisé par l'essor libre et direct de tendance primitive à concevoir tous les corps exterieurs quelconques, naturels ou artificiels, comme animés d'une vie essentiellement analogue à la nôtre, avec des simples differences mutuelles d'intensité." . . . .

[*The extraordinary savage belief of LYCANTHROPY is the subject of an Article under that title in Vol. 15.*]

THE HEBREW INVASION OF ENGLAND.

From Article (8 pages) by ISRAEL DAVIS, Barrister-at-Law.

Jews. . . . . . . The Jews were readmitted into England by Cromwell on the application of Manasseh ben Israel; and the Spanish and Portuguese Jews from Amster-

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For examples of articles on Philosophy, see pp. 175-179 of this pamphlet.

dam took a lease of ground for a burying-place at Stepney in February 1657. The first recorded interment was in 1658. The city of London, which was afterwards to aid so powerfully in the emancipation of the Jews, petitioned the council in the first years of the restoration to remove the competing Jewish merchants, but, this and other petitions being unsuccessful, a synagogue was built and the copyhold of the cemetery was acquired, although up to fifty years ago doubt was sometimes expressed whether Israelites, even if born in the country, could hold land in England. The right of Jewish charities to hold land was clearly established by an Act passed in 1846. The Jews were too few in number to be visited with special disabilities, but suffered from the general operation of the Tests Acts, which excluded them from political, civil, and municipal offices, from the bar, &c., and could be invoked to prevent them from voting at parliamentary elections. Jacob Abendana and David Nieto are rabbinical writers who flourished in England in the 17th and early in the 18th centuries. In 1725 Sarmento, a mathematician, was (like Gompertz and others after him) made a Fellow of the Royal Society. Emanuel Mendes da Costa was secretary and librarian of the society a few years later (died 1769). Sir Solomon Medina financed the commissariat in the duke of Marlborough's campaigns. But the Sephardic immigration is best known by the converts to Christianity whom it supplied, as Isaac Disraeli, and his son Lord Beaconsfield (who was baptized at the age of twelve), David Ricardo, the Lopes family, and others. Conversion to Christianity was encouraged by a statute of Anne (repealed in 1846), which compelled Jewish parents to make an allowance to their children who embraced the dominant faith. German Jews began to immigrate in large numbers after the accession of the house of Hanover. English statesmen soon perceived what important contributions the business ability of the Jews was capable of rendering to the wealth of the country in which they settled, but the enlightened appreciation of the governing class was long in making its way among the electors. In 1753 Mr Pelham passed his Jewish Naturalization Act, which was repealed the next year owing to popular clamour, "No more Jews, no wooden shoes," becoming as influential a refrain as Lilliburlero. . . . .

[*The recrudescence of Anti-Semitism is ably traced in an Article under that title by* LUCIEN WOLF *in Vol.* 25.]

THE HISTORY OF RELIGION.

From the Article (13 pages) *by* Prof. L. P. TIELE, *University of Leyden.*

Religions.— . . . . . . The comparative historical study of religions is one of the means indispensable to the solution of the difficult problem What is religion?—the other being a psychological study of man. It is one of the pillars on which not a merely speculative and fantastic, and therefore worthless, but a sound scientific philosophy of religion should rest. Still, like every department of study, it has its aim in itself. This aim is not to satisfy a vain curiosity, but to understand and explain one of the mightiest motors in the history of mankind, which formed as well as tore asunder nations, united as well as divided empires, which sanctioned the most atrocious and barbarous deeds, the most cruel and libidinous customs, and inspired the most admirable acts of heroism, self-renunciation, and devotion, which occasioned the most sanguinary wars, rebellions, and persecutions, as well as brought about the freedom, happiness, and peace of nations—at one time a partisan of tyranny, at another breaking its chains, now calling into existence and fostering a new and brilliant civilization, then the deadly foe to progress, science, and art.

Religions, like living organisms, have a history, and therefore this is to be studied first, so far as it can be known,—how they rise and spread, grow and fade away; how far they are the creations of individual genius, and how far of the genius of nations and communities; by what laws, if it is possible to discover them, their development is ruled; what are their relations to philosophy, science, and art, to the state, to society, and above all to ethics; what is their mutual historical relation, that is, if one of them sprang from another, or if a whole group are to be derived from a common parent, or if they only borrowed from one another and were subject to one another's influence; lastly, what place is to be assigned to each of those groups or single religions in the universal history of religion. . . . .

[*The histories of the World's Religions are all traced, each under its own heading, in the Tenth Edition of Encyclopædia Britannica.*]

THE CREED OF MILLIONS.

From the Articles (16 pages) *by* T. W. RHYS DAVIDS, *Ph.D., LL.D.*

Buddhism.—Since the article on BUDDHISM in the ninth edition of this work was written nearly the whole of the works composed in the earliest period of Buddhism have been edited in the original Pali, chiefly through the Pali Text Society. A few works of the second period have been edited in the original Pali or Sanskrit, and a number of books of later Buddhism have appeared in the various languages of Eastern Asia. To appreciate the additions thus made to our knowledge it is necessary to remember that the Buddha, like other Indian teachers of his period, taught by conversation only. A highly educated man (according to the education current at the time) speaking constantly to men of similar education, he followed the literary habit of his day by embodying his doctrines in set phrases (*sûtras*), on which he enlarged, on different occasions, in different ways. Writing was then widely known. But the lack of suitable writing materials made any lengthy books impossible. Such sûtras were therefore the recognized form of preserving and communicating opinion. They were catch-words, as it were, *memoria technica*, which could be easily remembered, and would recall the fuller expositions that had been based upon them. In the Buddha's time the Brahmins had their sûtras in Sanskrit, already a dead language. He purposely put his into the ordinary conversational idiom of the day, that is to say, into Pali. When the Buddha died these sayings were collected together by his disciples into what they call the Four Nikâyas, or "collections." . . . .

[DEAN FARRAR *writes the Article* JESUS CHRIST; *the* BISHOP *of* RIPON *writes that on the* CHRISTIAN CHURCH; *and* Cardinals VAUGHAN *and* GIBBONS *write of the* ROMAN CATHOLIC CHURCH.]

Remember that these extracts represent a mere portion of the space allotted to the subject of religion. In the Tenth Edition of the *Encyclopædia Britannica* is related the history of every race-development, is traced the origin of every belief, is narrated the biography of Mahomet, of Buddha, of Confucius, of the prophets and founders of every creed and sect and of every significant religious movement.

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THE subjects of Ethnology and Religion are so vast that no account of their survey in the *Encyclopædia Britannica*, which comprehends every aspect of them, has been possible in the preceding pages of Extracts. Let us take a matter about which you seek information, and so test the range of the volumes. You want to know about the practice of Cannibalism. You have heard of the custom in connexion with Polynesians, the Aborigines of Australia, the North American Indians, the Tierra del Fuegians. The Aztecs, too, the autochthonous inhabitants of Mexico, worshipped their war-god Huitzilopochtli by human sacrifice, and the limbs of the victims were eaten in the feasts which formed part of the festivals. And Cannibalism is often but a feature of savage worship, of Fetichism, Animism, Totemism, Taboo; it is, in fact, religious in its significance. All information concerning this and kindred subjects of savage worship can be found in the Tenth Edition.

The Article THEISM embraces a survey of primeval Religious Ideas, with notices of Polytheism, Monotheism, Trinitarianism, Unitarianism, Deism, Mysticism, Agnosticism; and the story of the World's Belief in a God is told in such Articles as DEISM, THEOSOPHY, KABBALAH, RATIONALISM, IDOLATRY, IMAGE WORSHIP.

The Article

CANNIBALISM

is by E. B. TYLOR, LL.D., F.R.S.

The Article

POLYNESIA

is by Rev. S. J. WHITMEE.

FETICHISM

is by WALTER HEPWORTH.

AUSTRALIA

is by R. ACTON.

MEXICO (AZTECS)

is by E. B. TYLOR, LL.D., F.R.S., and Prof. A. H. KEANE.

TABOO

is by J. G. FRAZER, M.A., who also contributes the interesting Article

TOTEMISM.

ANIMISM

is by A. C. OUGHTER LONIE.

TIERRA DEL FUEGO

is by Prof. A. H. KEANE, and

LYCANTHROPY

by J. F. M'LENNAN, LL.B.

THE Tenth Edition contains many articles which tell of all that exploration and research have discovered about Man-Eating among Races of Man. Now take the races themselves. You want to learn particulars of ethnological puzzles. The *Encyclopædia Britannica* tells you all about

MAN IN AFRICA
MAN IN ALGERIA
MAN IN AMERICA
MAN IN ARABIA
MAN IN ASIA
MAN IN AUSTRALIA

under the head of each country. But, among others, it also has Articles on

AMERICAN INDIANS,
ANDAMAN ISLANDERS,
BUSHMEN, The BONGO,
The AINUS of JAPAN,
HOTTENTOTS, COPTS,
SLAVS, COSSACKS,
ESKIMOS, FIJIANS, MAORIS.

The Gods of all Nations are described in the Tenth Edition, *e.g.*:

Apollo, Athena, Juno, Jupiter, Mars, Bel, Astarte, Ammon, Anubis, Isis, Osiris, Baal, Ra, Moloch.

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SPECIMEN PAGE OF THE INDEX

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SPECIMEN PAGE OF THE INDEX

These are facsimile sheets of the Index which is part of the Tenth Edition. There are a thousand pages like these, and though at first sight the effect may be confusing, the plan upon which the Index has been compiled is so simple that a child could use it. The number in heavy type next the entry-word is the volume, then comes the number of the page in the volume, and the letters a, b, c, d stand for the four quarters in each page, so that not only is the reader directed to the page, but even to the portion of the page in which he will find the information. The references to the Maps are arranged on a similar system. They can at once be distinguished from the other entries by their number (34 being the volume in which the maps are collected), and by the presence of capital letters, each followed by a number; these numbers and letters indicating the spaces on the map to which the searcher's attention is directed by the longitudinal and latitudinal lines lettered and numbered in the margins of the map.

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ARMY & NAVY

Walled towns, stored arsenals and armouries, goodly races of horse, chariots of war, elephants, ordnance, artillery, and the like; all this is but a sheep in lion's skin except the breed and disposition of the people be stout and warlike; nay, number itself in armies importeth not much where the people is of weak courage; for as Virgil saith, "It never troubles a wolf how many the sheep be."—BACON.

AR, and all that pertains to War, has been so much in the public mind during the last few years that it would be almost well to forget its existence, were it not a fact that the surest way to limit its occurrence is to be prepared for it. During a time of unexampled national strain, of resources taxed to a serious extent, nothing has been more remarkable than the fact that no Power deemed it wise even to threaten the British possessions in any quarter of the globe. The national lesson thus learnt of being ready, "to the last gaiter-button," is at the root of the teaching of M. Bloch, who believes that the final cessation of warfare will be due to the ever-increasing precision and deadliness of the weapons supplied to the world's armies.

The time, indeed, seems close at hand when the Great Powers, with the help of the blue-spectacled Professor working in his laboratory, will be awed into peaceful arbitration by the appalling weapons with which they will menace one another; that, in fact, warfare will perfect itself into non-existence. It is curiously ironical that the great advances of civilization should be accompanied by such refinements in the barbarous arts of war. When the First Edition of the Encyclopædia Britannica appeared, Englishmen were living in the age of the muzzle-loader, of the comparatively harmless round shot, and of the picturesque three-decker. To-day warfare has been made a thousandfold more terrible by the invention of the submarine boat, by the deadly Lyddite shell, and by the quick-firing machine-gun.

You have but to turn to the pages of the Tenth Edition, and to read such Articles as ORDNANCE, TACTICS, MACHINE GUNS, TORPEDO, and SHIP (SUBMARINE), to realize how much truth lies in M. Bloch's optimistic prophecies. The survey of modern warfare in all its scientific horror offered the reader in the Encyclopædia Britannica is indeed complete, and he will find many hours of valuable reading in such Articles as COMMAND OF THE SEA, by Vice-Admiral Sir Cyprian Bridge, K.C.B., and NAVIES, in which Lord Brassey and Lieutenant Carlyon Bellairs write from their special knowledge on problems of Naval Supremacy and Naval Policy vital to England's future. The few extracts here subjoined serve but as sign-posts to the endless roads of knowledge which lie open to the possessor of the Encyclopædia Britannica.

ENGLAND'S DANGER.

From the Article (14 pages) by Vice-Admiral Sir CYPRIAN BRIDGE, K.C.B.

Sea Power.— . . . . . . Like many other things, sea-power is composed of several elements. To reach the highest degree of efficacy it should be based upon a population naturally maritime, and on an ocean commerce naturally developed rather than artificially enticed to extend itself. Its outward and visible sign is a navy, strong in the discipline, skill, and courage of a numerous *personnel* habituated to the sea, in the number and quality of its ships, in the excellence of its *matériel*, and in the efficiency, scale, security, and geographical position of its arsenals and bases. History has demonstrated that sea-power thus conditioned can gain any purely maritime object, can protect the trade and the communications of a widely-extended empire, and while so doing can ward off from its shores a formidable invader. There are, however, limitations to be noted. Left to itself its operation is confined to the water, or at any rate to the inner edge of a narrow zone of coast. It prepares the way for the advance of an army, the work of which it is not intended, and is unable to perform. Behind it, in the territory of which it guards the shores, there must be a land-force adjusted in organization, equipment, and numbers to the circumstances of the country. The possession of a navy does not permit a sea-surrounded State to dispense with all fixed defences or fortification; but it does render it unnecessary and indeed absurd that they should be abundant or gigantic. The danger which always impends over the sea-power of any country is that, after being long unused, it may lose touch of the sea. The revolution in the constructive arts during the latter half of the 19th century, which has also been a period of but little-interrupted naval peace, and the universal adoption of mechanical appliances, both for ship-propulsion and for many minor services, . . . makes the danger mentioned more menacing in the present age than it has ever been before.

. . . .

[*See the Article SEA (COMMAND OF), by same Author.*]

IS THE TORPEDO EFFECTIVE?

From the Article ($5\frac{1}{2}$ pages) by Rear-Admiral SYDNEY M. EARDLEY-WILMOT.

Torpedo.— . . . . . . It is difficult to say what place the Whitehead torpedo will take in the next great naval war, and whether it is destined to fulfil those expectations which the expenditure allotted everywhere to this branch would seem to warrant. . . . . . Though the armament of all battleships and cruisers is not considered complete without an installation of Whitehead torpedoes, there is no instance of either suffering injury from one of their own class employing this weapon in recent wars. At the battle of Yalu, between the Chinese and Japanese fleets, torpedoes were discharged by the former, but none took effect. The Japanese trusted solely to gun-fire. In the war between Spain and the United States the inferiority of Admiral Cervera's squadron to that under Admiral Sampson might at the battle of Santiago have been to some extent counterbalanced by a skilful and vigorous use of torpedoes. If, instead of striving only to escape, a bold dash had been made for the American ships, the Spanish cruisers rapidly approaching end on to the foe, enveloped in the smoke of their own guns, should—some at least—have got within torpedo range without fatal injury. Closing each other at a speed of 10 knots only, they would cover an interval of 6000 yards in 9 minutes—a short time in which to disable a ship by gun-fire under such conditions. But Cervera elected to offer a passive resistance only, and while suffering destruction wrought no material injury upon his opponents. On the other hand

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there have been several instances of large warships being sunk by locomotive torpedoes discharged from small craft. During the Chilian revolutionary war of 1891, a battleship, the *Blanco Encalada*, of 3500 tons, was attacked in Caldera Bay by two torpedo vessels—the *Lynch* and *Condell*—of 750 tons. They entered the bay at dawn, the *Condell* leading. This vessel fired three torpedoes which missed the ironclad; then the *Lynch*, after one ineffective shot, discharged a second torpedo, which struck the *Blanco* on the side nearly amidships. The latter had opened fire with little result, and sank soon afterwards. A similar incident occurred in 1894, when the Brazilian ironclad *Aquidaban* was sunk in Catherina Bay by the *Sampaio*—a torpedo vessel of 500 tons. She entered the bay at night, and first discharged her bow torpedo at the ironclad, which missed; she then fired a broadside torpedo, which struck and exploded against the bow of the *Aquidaban*. It caused a great shock on board, throwing an officer on the bridge into the water. The vessel sank soon afterwards, and the *Sampaio* escaped uninjured.

After the defeat of the Chinese at sea, their remaining ships took refuge in the harbour of Wei-hai-wei. Here they were blockaded by the Japanese fleet, which, having a number of torpedo-boats, made several determined attacks upon the ships inside. After one or two attempts, foiled by the obstructions placed by the Chinese to bar the passage, the Japanese boats succeeded in torpedoing several ships, and thus expedited the reduction of the place. . . . .

[ORDNANCE (*see diagram on p.* 172), MACHINE GUNS, SMALL ARMS, FORTIFICATION, CAVALRY, NAVIES (COMPARATIVE STRENGTH OF), *are a few of the headings under which National Defence is treated.*]

IS THE DAY OF THE "DIRECT ATTACK" OVER?

From the Article (8 pages) by Sir GEORGE SYDENHAM CLARKE, *K.C.M.G., F.R.S., Governor of Victoria, Australia, and* Major JACKSON, *R.E.*

Fortification.— . . . . . . At the same time, on account of flatter trajectories, the increased tendency to ricochet, and in the British service the abandonment of common shell for field guns, their power against earthworks was if anything diminishing, and the introduction of smokeless powder gave the advantage of concealment to troops and guns behind cover, as against those advancing across the open. These considerations, added to previous experience, might have made it clear that in future wars field defences properly conceived and skilfully planned would be more effective than ever.

The South African War should set these questions at rest, and when its lessons have been fully learnt there can be no doubt that the use of entrenchments will rank as one of the first necessities of warfare. This use will be extended to the attack. The direct attack will seldom be attempted, and the endeavour of the assailant will be to outflank the defender. Since it is clear that a small force entrenched can resist the attack of a stronger one, it is open to the attack to leave a weak force entrenched in front of the enemy's main position, while endeavouring to get round his flank. The defence may reply in the same way, and the question will be which side shall be quickest in extending and pushing forward its flank works. In such a contest mobility will be of the greatest importance. Such is the disparity of strength between the attack and the entrenched defence, that under certain conditions of ground it is even conceivable that the weaker force might surround and imprison the stronger. If a frontal attack is unavoidable, the assaulting troops, when checked within a certain distance of the position, should not retire, but hold on to what they have gained, extemporizing such cover as they can; and at nightfall entrench themselves there. . . . .

Artillery.—Field artillery projectiles may be roughly divided into two classes: shrapnel and common shell. The bullets of the
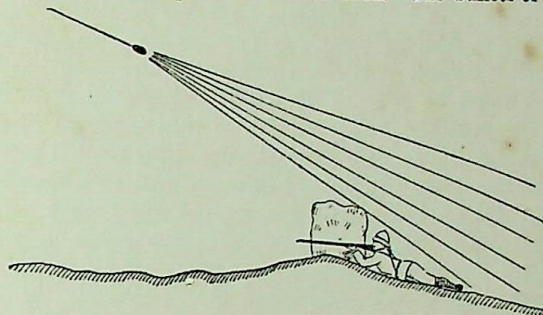
Fig. 1.

former depend for their destructive power on the remaining velocity of the shell at the time when it is burst; the fragments of the latter are driven by the bursting charge of the shell. It follows that shrapnel bullets always fly forward, forming what is called a "cone of dispersion" about the line of flight of the shell. At a long range, when the shell falls at a steep angle, shrapnel bullets have not enough velocity to be effective. It is usually taken that the steepest slope of effective shrapnel is about one in three ($\frac{1}{3}$). Thus a man lying behind a boulder 3 feet high (see Fig. 1) would be protected against a shrapnel bullet; similarly a man in the trench shown in Fig. 2 would be safe. . . . .
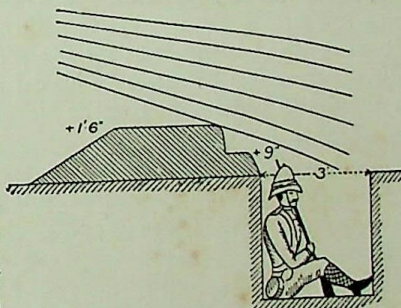
Fig. 2.

[*For modern aspect of warfare see* WAR, SEA POWER, COMMAND OF THE SEA, ARMOUR, SHIP (SUBMARINES), TORPEDO, ORDNANCE, *&c.*]

How the Index helps the Book-lover.

How often it happens to us all to be haunted by the name of a book, or to be involved in an argument as to its merits, and yet to be unable to recall the name of its author. The New Index of the Tenth Edition will be an invaluable help in such cases. Let us take "Rob Roy on the Jordan." We have heard the title often and often. Some of us have read the book years ago, but it may easily happen that no one remembers when it appeared nor when it was written. We have only to turn to our Index, with its reference under

"Rob Roy on the Jordan" 1 4d.

and we have at once the key to the information needed.

The instances might be multiplied, and will vary with each reader's individual experience. We may wish to look up "Golden Ass," or "Robinson Crusoe," or "Wandering Jew," or again we may want to know who was Pantagruel, or Wilfer, or Frankenstein. We have not to seek our information through the channel of other headings, but under each of these names the reader will find references to the passages which explain them.

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BATTLE-FIELD JUSTICE.

From the Article by SIR JOHN SCOTT, K.C.M.G.

Military Law.— . . . . . . The courts-martial in the year preceding the South African war were over 8000 in number. The number in 1901 exceeded 20,000. The number of field general courts-martial greatly increased in consequence of the war, and a field general court-martial has become of special importance. It is convened (1) by any officer in command of a detachment or portion of troops beyond the seas when not on active service, where complaint is made to him that any offence has been committed by any person under his command against the property or person of any inhabitant or resident in that country; or (2) by the commanding officer of an army corps or portion of a corps on active service, or by any officer in immediate command of a body of forces on active service where it appears to him on complaint or otherwise that a person subject to military law has committed an offence. The officer must be satisfied that it is not practicable, with due regard to the public service, to try the person by an ordinary court-martial. The quorum of the court is three, if consistent with military exigencies, and each member must have held a commission for not less than a year. The quorum may be reduced when the public service requires it. The procedure of ordinary courts-martial is observed as far as possible, and the proceedings always should be in writing when possible. But in the circumstances in which these courts are assembled, it is not always possible to adhere to the technical rules which obtain in the ordinary tribunals, although the broad principles are not violated. The evidence on a field general court-martial is taken on oath. The prisoner may cross-examine the witnesses for the prosecution, and may call any available witnesses for his defence. The prisoner is allowed to address the court in his own defence. . . .

Field general courts-martial.

[*Military and Naval matters receive great attention in the Tenth Edition.* ADMIRALTY ADMINISTRATION, MARINES, TACTICS, GUN-MAKING, TORPEDOES, SHIPS, *are but some of the titles to articles dealing with the equipment and efficiency of the services.*]

IN THE PRESENCE OF DEATH.

From the Article (19 pages) by COLONEL G. F. R. HENDERSON, C.B.

War.— . . . . . . A battle-field in the old days, except at close quarters, was a comparatively safe locality, and the greater part of the troops engaged were seldom exposed for a long time together to a hot and continuous fire. To-day death has a far wider range, and the strain on the nerves is consequently far more severe. Demoralization, therefore, sets in at an earlier period, and it is more complete. When troops once realize their inferiority they can no longer be depended on. If attacking, they refuse to advance; if defending, they abandon all hope of resistance. It is not the losses they have actually suffered, but those that they expect to suffer that affect them. The ordeal of facing the hail of modern fire tells so heavily on ordinary flesh and blood, that those who have been hotly engaged, if casualties have been very numerous, will seldom be brought to fight again, except on the defensive, the same day, or even the same month. There is no bringing up men again and again to the attack, as in the days of Napoleon; and unless discipline and national spirit are of superior quality, unless even the private soldier is animated by something higher than the mere habit of mechanical obedience, panic, shirking, and wholesale surrender will be the ordinary features of a campaign. These phenomena made themselves apparent, though in a less degree, as long ago as the War of Secession, when the weapon of the infantry was the muzzle-loading rifle, firing at most two rounds a minute, and when the projectiles of the artillery were hardly more destructive than the stone shot of Mons Meg. With the magazine rifle, machine guns, shrapnel, and high explosives, they have become more pronounced than even at Vionville or Plevna. "The retreat of the 38th (Prussian) Brigade," writes Captain Hoenig, an eye-witness of the former battle, "forms the most awful drama of the great war. It had lost 53 per cent. of its strength, and the proportion of killed to wounded was as 3 to 4. Strong men collapsed inanimate. . . . I saw men cry like children, others fell prone without a sound; in most the need of water thrust forth all other instincts; the body demanded its rights. 'Water, water,' was the only intelligible cry that broke from those moving phantoms. The enemy's lead poured like hail upon the wretched remnant of the brigade; yet they moved only slowly to the rear, their heads bent in utter weariness; their features distorted under the thick dust that had gathered on faces dripping with sweat. The strain was beyond endurance. The soldier was no longer a receptive being; he was oblivious of everything, great or small. His comrades or his superiors he no longer recognized; and yet he was the same man who but a short time before had marched across the battle-field shouting his marching chorus. A few active squadrons, and not a man would have escaped! Only he who has seen men in such circumstances, and observed their bearing, knows the dreadful imprint that their features leave upon the memory. Madness is there, the madness that arises from bodily exhaustion combined with the most abject terror. . . . I do not shrink," he adds, "from confessing that the fire of Mars-la-Tour affected my nerves for months." . . . .

[*The Tenth Edition of the Encyclopædia Britannica also contains Articles on the* CHINA-JAPANESE WAR, *the* SPANISH AMERICAN WAR, *and all the Wars of History, under the headings of the various countries.*]

All taxpayers are concerned with the judicious employment of public money for the purposes of national defence. How often has the firing of a stray shot sounded the first note of a song of national triumph over a fallen enemy. To the man who will not think facts are enemies, but to a man who never passes a day without mastering an obstacle of one kind or another the accumulation of valuable facts is an invigorating sport. The above extracts are but a brief challenge—the stray shot that heralds the battle—to the reader to come and wrestle with the mass of information on Naval and Military subjects which is to be found in the *Encyclopædia Britannica*. The addition of an Index of more than half a million entries to the Tenth Edition rescues him from an infinity of fruitless labour, while in no way robbing the contest of the keen enjoyment it provides. The articles on MILITARY KITES and BALLOONS by Major-General Baden F. S. Baden-Powell are replete with the most recent information on service aeronautics, and are but two examples from the mass of valuable material accessible to the possessor of the Tenth Edition.

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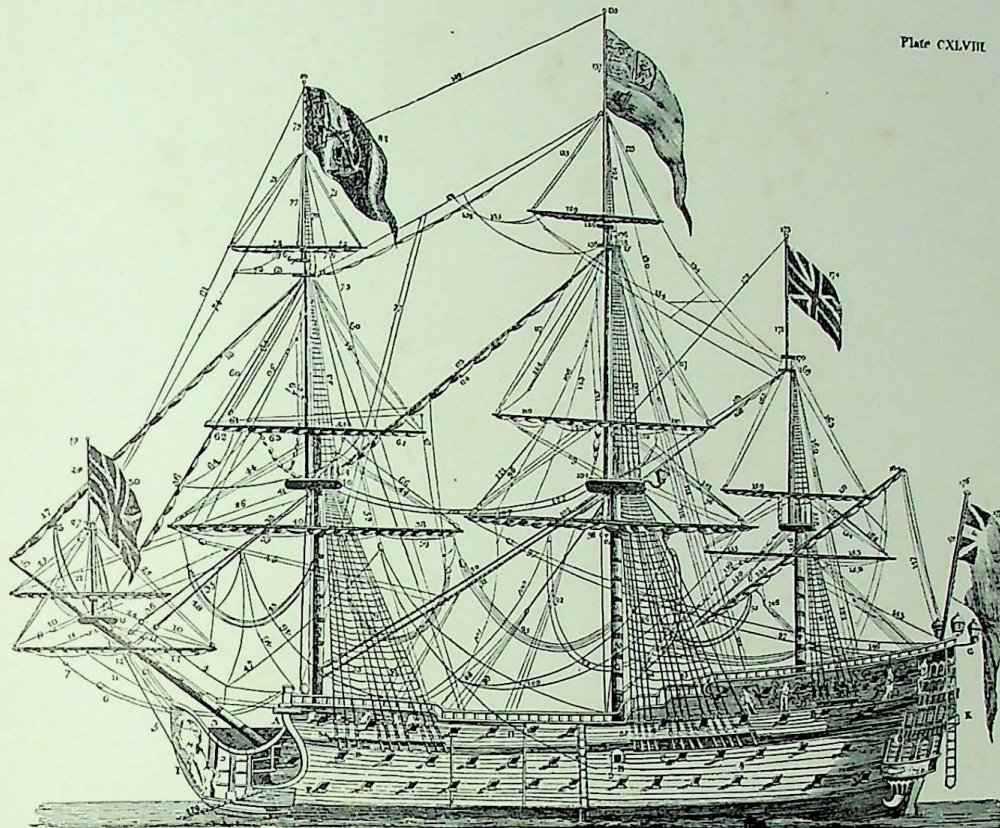
BATTLESHIPS, PAST AND PRESENT.

Plate CXLVIII.

Facsimile of plate of a first-rate Ship of War of the period, from the First Edition of the Encyclopædia Britannica, first part published 1768, *complete in* 3 *volumes quarto,* 2670 *pages,* 160 *copperplates, published* 1771.

How times change is shown by this extract:—

> "The expence of building a common firft rate, with guns, tackling, and rigging is computed at 60,000*l.* fterling."

Below is a facsimile of plate in the Tenth Edition of two English Battleships added to the Royal Navy within the last few years. H.M.S. *Royal Oak* is 380 feet long, 75 feet beam, 27½ feet mean draught, 13,000 H.P., and 14,150 tons displacement. She cost £839,136! H.M.S. *Centurion* is 360 feet long, 70 feet beam, 25½ feet mean draught, 10,500 tons displacement, and cost £750,000!

Fig. 35.—H.M.S. *Royal Oak.*

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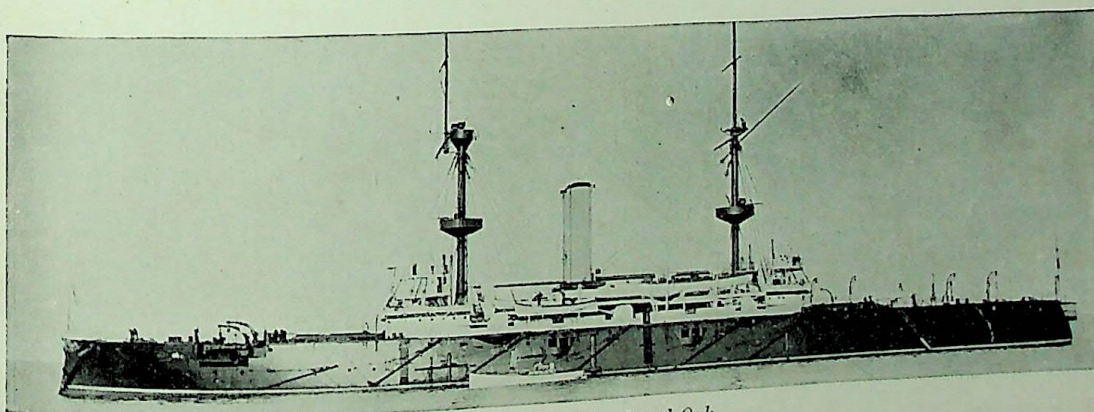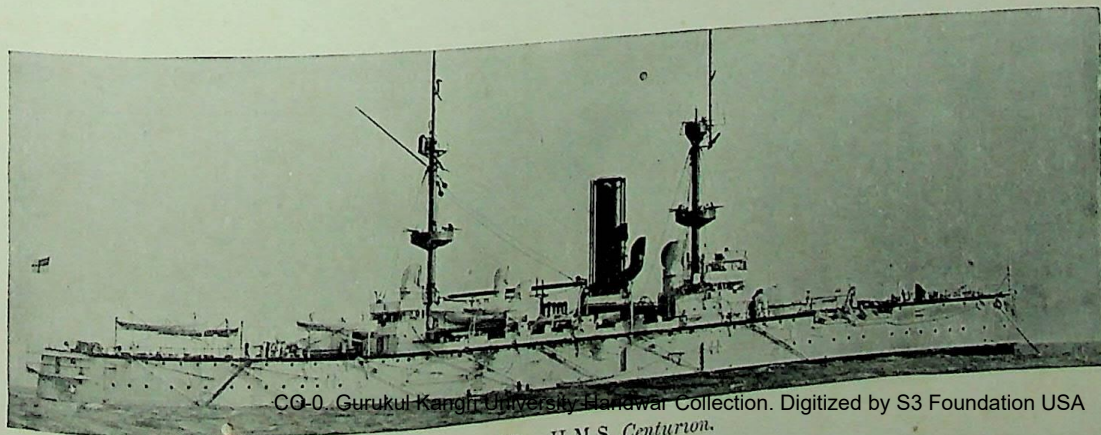
Fig. 37.—H.M.S. *Centurion.*

A PAGE OF MERCHANT VESSELS.

Much of the coasting trade of the world is carried on by schooners, brigs, and brigantines. These vessels were formerly employed in the Baltic, and to some extent in the West Indies and the Mediterranean. For the exact description of the distinguishing features of schooners, brigs, brigantines, and barquentines, the reader should see the article **SHIP**, the 39 pages of which contain 22 full-page plates, besides explanatory tables, diagrams, etc.

Fig. 5.—Coasting Schooner.
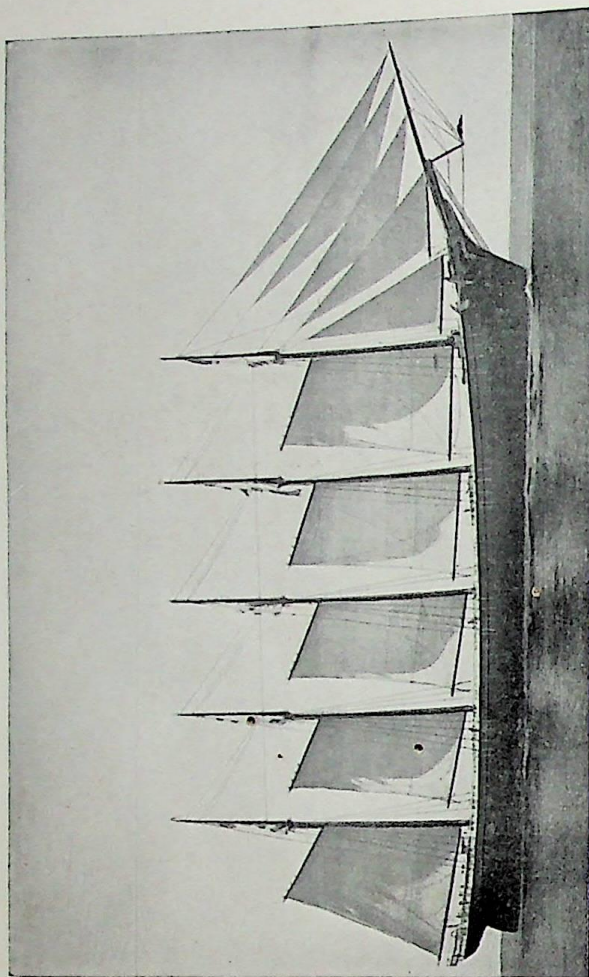
Fig. 6.—Schooner, *Helen W. Martin.*
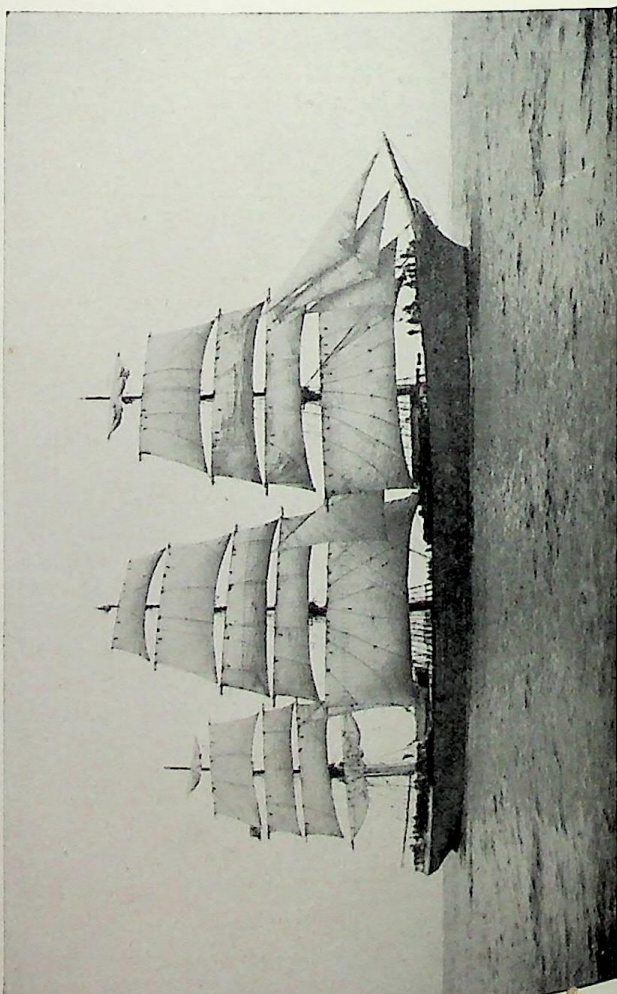
Fig. 7.—Ship, *Victoria Regina.*

This cargo sailing ship was built of iron at Southampton in 1881; she is 270 ft. long and has a gross tonnage of 2006. Although she has a good spread of canvas and is a fast vessel, she carries a very large cargo for her dimensions.
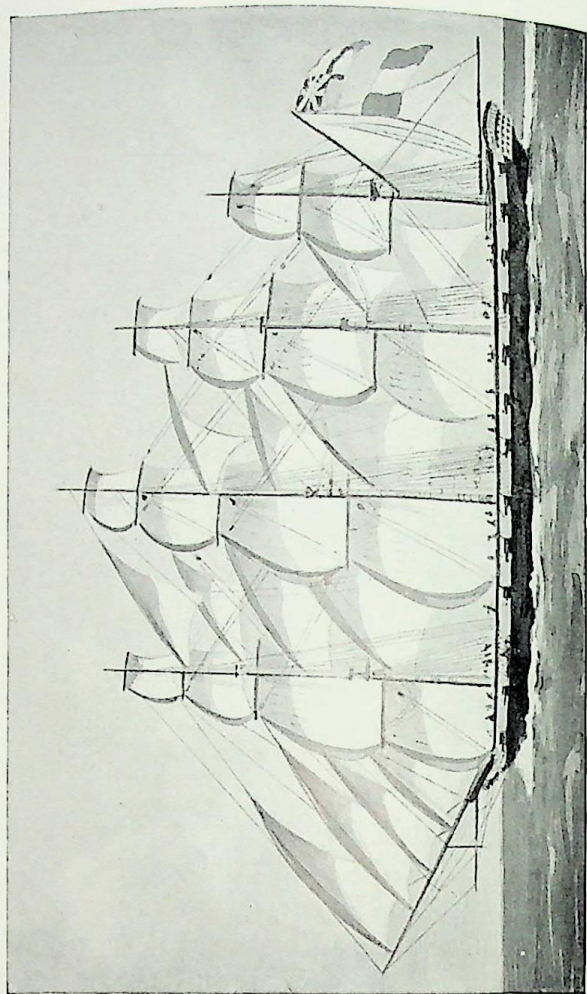
Fig. 8.—French Ship, *L'Invention.*

The *Naval Chronicle*, vol. vii., 1802, contains particulars of the French privateer *L'Invention*, which was captured by the British ship *Immortalité*; she was rigged as a four-masted ship, carried 26 guns, and had a complement of 220 men.

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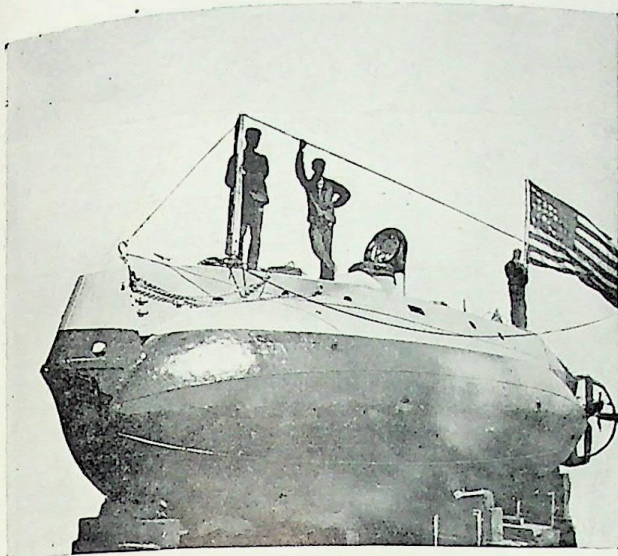
FIG. 91.—U.S.A. *Holland.*

This submarine vessel is 59 ft. in length: Fig. 93 shows her on trial.
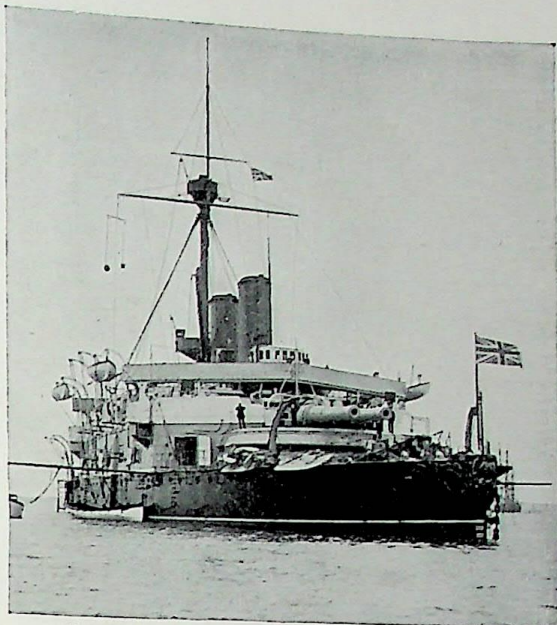
FIG. 32.—H.M.S. *Camperdown.*

The prototype of this ship was the *Collingwood;* other battleships of the same type are the *Rodney, Howe, Benbow,* and *Anson.*

FIG. 38.—H.M.S. *Renown.*

This vessel is sheathed and coppered: her dimensions are 380 ft. length, beam 72 ft., mean draught 25½ ft., displacement 12,350 tons.
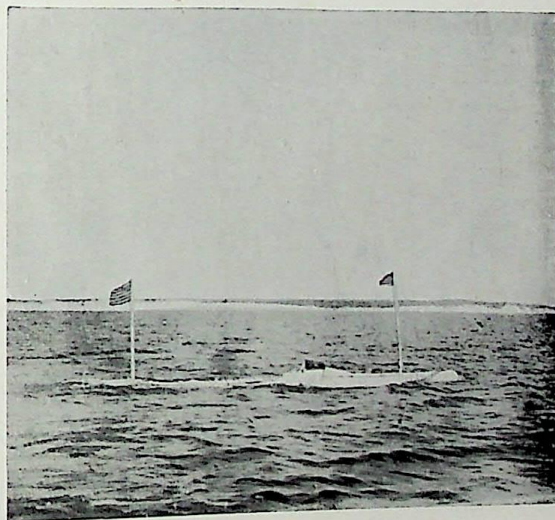
FIG. 93.—U.S.A. *Holland.*

For a description of the *Plongeur,* also designed by Holland, see the article SHIP.
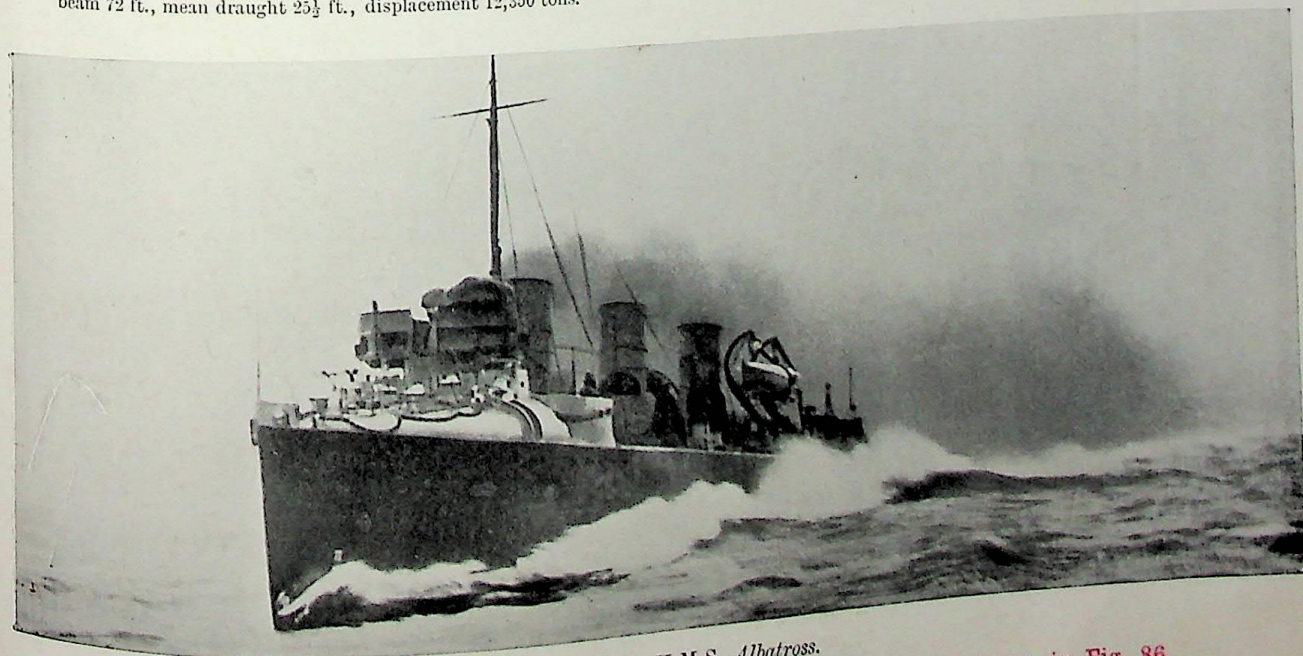
FIG. 86.—H.M.S. *Albatross.*

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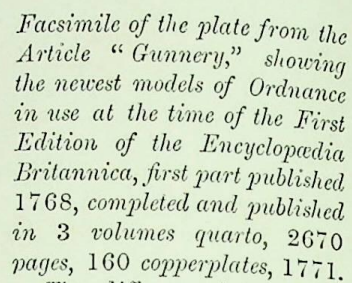
The general appearance of a typical modern torpedo destroyer is shown in Fig. 86, which represents the *Albatross* at full speed.

GUNS, OLD AND NEW.

Facsimile of the plate from the Article "Gunnery," showing the newest models of Ordnance in use at the time of the First Edition of the Encyclopædia Britannica, first part published 1768, completed and published in 3 volumes quarto, 2670 pages, 160 copperplates, 1771.

The difference between the names of cannon a hundred and thirty years ago and to-day is well suggested in the following quotation:—

"Great guns, called alſo by the general name cannons, make what we alſo call ordinance, or artillery; under which come the ſeveral ſorts of cannons, as cannon royal, demi-cannon, &c. Culverins, demi-culverins, ſakers, minions, falcons, &c."

From the Article (27 pages) ORDNANCE in the Tenth Edition, showing modern mounted guns.

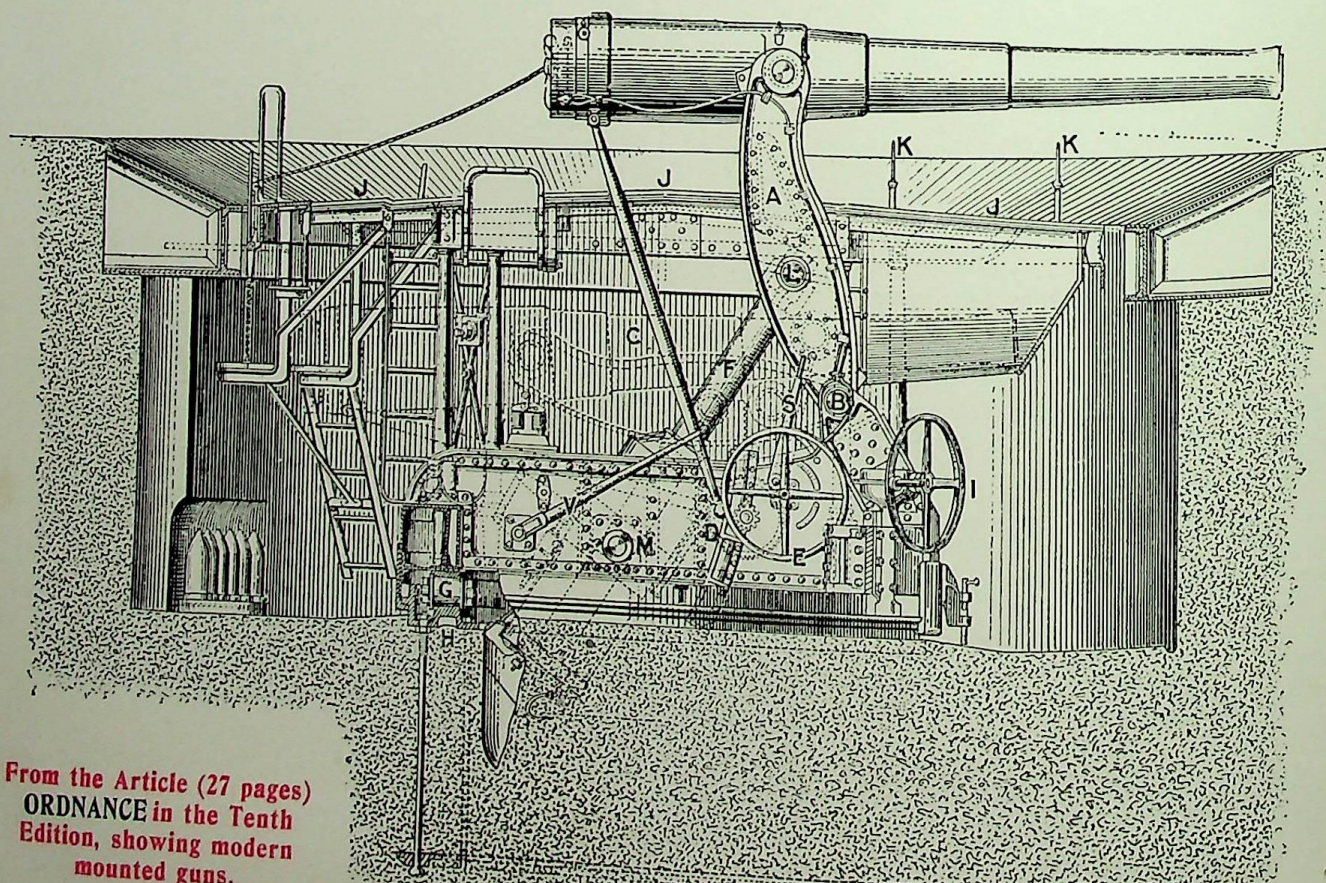



Fig. 1.—Diagram of a 6-inch B.L. Disappearing Mounting, Mark IV.

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Tristram Shandy and the Index

'Twas not by ideas—by Heaven!—his life was put in jeopardy by words.—LAURENCE STERNE.

IT is not alone within the pages of the *Encyclopædia Britannica* that the value of the Index will be experienced by the reader. Many an obscure passage in a book which we may happen to be reading will lose its obscurity with the aid of this volume added to the Tenth Edition. A sentence frequently defies our understanding, because we have not at our command so large a vocabulary as our author. His words, and not his ideas, put our life in jeopardy. Many of the beauties in so transparent a writer as Laurence Sterne become polished into a brighter significance if we can say to ourselves that we know the meaning of each successive word.

While the gentle eccentricities of my uncle Toby will always command an instinctive sympathy in the reader, a moderate acquaintance with that masterpiece of digression, *Tristram Shandy*, will dispose him to regard those eccentricities exclusively from the point of view of Mr. Shandy, the writer's father. That is to say, he will feel a sentimental lenience towards a number of observations on military tactics without the slightest knowledge of what they mean. But a deeper knowledge of the book puts us into the mental atmosphere of uncle Toby himself. We see that he is the reflexion of an eternal idea. For every reader also has his hobby-horse—his intellectual passion, the technical terms of which are only known to himself and those whose spirit has guided their steps to the same enchanted region.

Let us try and follow uncle Toby closely into those pleasures of the imagination which he constructed in the garden with corporal Trim. Here is Sterne's prelude to our initiation:

"I must remind the reader, in case he has read the history of King William's wars,—but, if he has not—I then inform him, that one of the most memorable attacks in that siege, was that which was made by the English and Dutch upon the point of the advanced counterscarp, before the gate of St. Nicholas, which inclosed the great sluice or water-stop, where the English were terribly exposed to the shot of the **counter-guard** and **demi-bastion** of St. Roch: The issue of which hot dispute, in three words, was this,—That the Dutch lodged themselves upon the counter-guard—and that the English made themselves masters of the **covered way** before St. Nicholas's gate, notwithstanding the gallantry of the French officers, who exposed themselves upon the **glacis** sword in hand.

"As this was the principal attack of which my uncle Toby was an eye-witness at **Namur**,—the army of the besiegers being cut off, by the confluence of the Maes and Sambre, from seeing much of each other's operations,—my uncle Toby was generally more eloquent and particular in his account of it; and the many perplexities he was in, arose out of the almost insurmountable difficulties he found in telling his story intelligibly, and giving such clear ideas of the differences and distinctions between the **scarp** and **counterscarp**,—the glacis and covered way,—the half-moon, and **ravelin**,—as to make his company fully comprehend where and what he was about.

"Writers themselves are too apt to confound these terms;—so that you will the less wonder, if, in his endeavours to explain them, and in opposition to many misconceptions, that my uncle Toby did oft-times puzzle his visitors, and sometimes himself too."

Every reader who is not a military expert, or whose knowledge of history does not extend to a definite memory of the battles and the wars of William III., will be compelled to admit that the sense of the above passage is mutilated for him by his ignorance of the meaning of the words printed in red type.

Now let us see how the Index to the Tenth Edition will point the way to the solution of his difficulties. He has only to refer to the passages suggested in the adjoining fragment of the Index, and the meaning of each word will at once become clear to him by the context in which it is placed in the articles indicated.

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THE ARMY

In every department of Military affairs, the maintenance of armies, the conduct of war, &c., the Tenth Edition is a valuable and competent guide. But it is more than this; for it includes that historical review of each custom or implement of warfare which forms so attractive a feature to the reader.

You want to know how our ancestors fought. The Tenth Edition tells you this in a series of articles, e.g.,

ARMS AND ARMOUR,
ARMY, ARCHERY,
ARTILLERY,
BATTERING-RAM,
BATTLE, BLOCKADE,
FORTIFICATION;

and you wish to know of those warrior heroes of the past—Scipio Africanus, Belisarius, Charlemagne, Robert Bruce, the Black Prince, Earl of Warwick, Oliver Cromwell, Turenne, Prince of Condé, John Sobieski, Charles XII., Peter the Great, Washington, Sherman, Jackson, Moltke, of all these and many more will the Tenth Edition tell you.

In the picturesque light of battles chronicled by the historian, the constitutional significance of military organizations is apt to escape our notice. We become affected with the smell of powder and smoke; we are heart and soul with the action of individual heroes. We forget that they are but units in a complex system of long historical growth. In the Tenth Edition we may learn the distinguishing features of Roman Equites, Feudal Military Service, Knighthood, Gendarmerie, Militia, Yeomanry, Cuirassiers, Condottière, Enlistment, Military Costumes, Barracks, Desertion, Military Law, Martial Law, Pensions, Ambulance, Armistice.

In authorities on Naval and Military subjects the Tenth Edition is as well equipped as in every other matter. The following are a few of those who have contributed to its pages:—

Sir JOHN SCOTT, K.C.M.G.

Sir GEO. SYDENHAM CLARKE, K.C.M.G., F.R.S., Governor of Victoria, Australia.

Vice-Admiral
Sir CYPRIAN BRIDGE, K.C.B.

Rear-Admiral
SYDNEY M. EARDLEY-WILMOT.

The Right Hon. LORD BRASSEY, K.C.B., D.C.L.

Major
BADEN F. S. BADEN-POWELL.

Sir NATHANIEL BARNABY, K.C.B., late Director of Naval Construction, Whitehall.

Colonel Sir CHAS. NUGENT, R.E.

Colonel Sir G. POMEROY COLLEY, K.C.S.I.

The Hon.
Sir WALTER PHILLIMORE, Bart.

Admiral Sir VESEY HAMILTON.

Rear-Admiral W. T. SAMPSON, U.S.N.

THE NAVY

The pages of the 35 Volumes abound in subjects of nautical interest. Whether the reader be interested in blockades, in privateering, in piracy, or whether his interest centre more specifically in turret-ships, barbette-ships, or ironclads, it is in the pages of these volumes that he will be able to pursue that interest with the greatest facility and the most instruction. Information about prize courts, the management of dockyards, the relative strength of Navies, the science of lighthouses, of the compass, of the chart; the knowledge of Ocean Currents, of the Gulf Stream, of the mysteries of spars and rigging, are to be acquired from the Tenth Edition. Even the least nautical of persons has probably been at sea on numerous occasions. He will not know the meaning of such words as Capstan, Bends and Splices, Sextant, and many other technical expressions. A few minutes with the Index of the Tenth Edition will enable a man to satisfy himself upon these and all other points.

The following are some of the principal articles in the Tenth Edition which should be studied in connexion with Naval affairs:

SEAMANSHIP, SHIP,
SHIPBUILDING, STEAMSHIPS,
ADMIRAL, ADMIRALTY,
ADMIRALTY CHARTS,
SEA, COMMAND OF,
SEA POWER, MARINES,
TORPEDO, SALVAGE,
LIFE-BOAT, NAVIES,
NAVIGATION, &c.

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EXAMPLES extracted from the many Articles on PHILOSOPHY PSYCHOLOGY and the Spirit-World

In every the wisest Soul lies a whole world of internal Madness, an authentic Demon-Empire.—CARLYLE.

THE literature of philosophy is without end, and to the speculative mind no form of inquiry is so attractive as that which leads to that borderland of knowledge and the unknown which has always been clothed in the twilight of Hesperides. That a philosophical principle underlies the action of most men is undeniable, but to comparatively few men has it been given to be able to measure the complex hazards of fortune in the full consciousness of an elaborate philosophic system. We hear with puzzled amusement that Nero fiddled while Rome burned. Yet who but the philosopher can measure the full significance of such an episode—the causes of the Emperor's indifference, the precise psychology of his mind when he was performing an action that was to serve as a permanent story for all posterity?

The presence of philosophy in any system of thought is all the more certain because the limits of its province can never be defined. From Heraclitus to Herbert Spencer or Nietzsche, the philosopher has made beautiful guesses at what are eternally insoluble problems. And here the connexion of religion with philosophy is obvious, for all religions are an attempt to give a common formula to philosophic thought. Moreover, other subjects deal with a division or subdivision of phenomena in the world, but philosophy concerns herself with all phenomena.

That the Tenth Edition of the Encyclopædia Britannica provides the reader with a mass of material for philosophic study, will be easily gathered from the few extracts which follow. And it is well to remember that all aspects of philosophy from the earliest to the latest schools are fully represented in the pages of this edition. The convenience of an Index containing more than half a million words for reference will commend itself to the student of philosophy no less than to all other readers of the Thirty-five Volumes.

THE CHAMPIONS OF IDEALISM AND REALISM.

From the Articles (68 pages) by Dr CAIRD, LL.D., Master of Balliol, Oxon., and THOMAS CASE, M.A., Professor of Moral and Metaphysical Philosophy, Oxford.

Metaphysics— . . . . . . At the present day realism is despised on the ground that its differentiation of body and soul, natural and supernatural, ignores the unity of being. Indeed, in order to oppose this unity of being to the realistic duality, both materialists and idealists nowadays arrogate to themselves the title of monists, and call realists dualists by way of disparagement. But we cannot classify metaphysics by the antithesis of monism and dualism without making confusion worse confounded. Not to mention that it has led to another variety, calling itself pluralism, it confuses materialism and idealism. Extremes meet; and those who believe only in body, and those who believe only in mind, have an equal right to the equivocal term "monist." Moreover, there is no real opposition between monism and dualism, for there can very well be one kind of being, without being all body or all soul. . . .

. . . . . . Now, when in surrendering theology and metaphysics we have also to surrender God and the soul, we are not free from materialism. Positivism, however, shelters itself behind the vague word "phenomena." Lastly, in England we have not only an influence of positivism, but also, what is more important, the synthetic philosophy of Herbert Spencer. The point of this philosophy is not materialism, but realism. The author himself says that it is transfigured realism—which is realism in asserting objective existence as separate from subjective existence, but anti-realism in denying that objective existence is to be known. In his *Principles of Psychology* he twice quotes his point that "what we are conscious of as properties of matter, even down to its weight and resistance, are but subjective affections produced by objective agencies which are unknown and unknowable." This then is his transfigured realism, which, as far as what is known goes, is idealism, but as far as what exists goes, realism—of a sort. . . . . .

. . . . . . By thus supposing a psychical basis to evolution, Fechner, anticipating Wundt, substituted a psychical development of organs for Darwinian accidental variation. Where Darwin would say that a cock has crest and spurs because individuals happened to vary in this advantageous manner, Fechner would suppose, as the inner aspect of the physical organism, a "psychical impulse" (*psychische Streben*) to fight, predisposing the germs and therewith the offspring. The difficulty of such speculations is to prove that things apparently dead and mindless are living souls. Their interest to the metaphysician is their opposition to physics on the one hand and to theism on the other. We have nowadays to ask ourselves whether we are to resign our traditional belief that the greater part of the world is mere body, but that its general adaptability to conscious organisms proves its creation and government by God, and to take to the new hypothesis, which, by a transfer of design from God to Nature, supposes that everything physical is alive, and conducts its life by psychical impulses of its own. Fechner himself went even farther, and together with design transferred God Himself to Nature. This is the subject of his last metaphysical work, *Die Tagesansicht gegenüber der Nachtansicht* (1879). The "day-view" is the view that God is the psychophysical, all-embracing being, the law and consciousness of the world; as opposed to the "night-view," according to which the world is not throughout psychical, but consciousness appears only transiently in men and animals, while the rest of the world is dark night. The "day-view," which is Fechner's, resembles the views of Hegel and Lotze in its pantheistic tendency. But it does not, like theirs, sacrifice our personality; because, according to Fechner, there is neither one infinite mind with which our mind is identical, nor one infinite active substance of which we are modifications, but one divine consciousness, which includes us as a larger circle includes smaller circles. By this ingenious suggestion of the membership of one spirit in another, Fechner's "day-view" also puts Nature in a different position. . . . .

We have dwelt on this curious metaphysics of Fechner because it contains the master-key to the philosophy of the present moment. . . . .

[*The Articles* ETHICS, NATURALISM, NEO-PLATONISM, PHILOSOPHY, PERIPATETICS, PESSIMISM, LOGIC, SOPHISTS, *should all be read by the student of Philosophy.*]

See the Article on HERBERT SPENCER in the Tenth Edition.

The subject of this extract bears directly upon the nature of modern French realism as described on p. 118 of this pamphlet.

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A PAGE OF PHILOSOPHERS.

From the Article (9 pages) *by* W. SORLEY, M.A.

Leibnitz.— . . . . . . The ultimate elements of the universe are, according to Leibnitz, individual centres of force or monads. Why they should be individual, and not manifestations of one world-force, he never clearly proves. His doctrine of individuality seems to have been arrived at, not by strict deduction from the nature of force, but rather from the empirical observation that it is by the manifestation of its activity that the separate existence of the individual becomes evident; for his system individuality is as fundamental as activity. "The monads," he says, "are the very atoms of nature—in a word, the elements of things," but, as centres of force, they have neither parts, extension, nor figure (p. 705). Hence their distinction from the atoms of Democritus and the materialists. They are metaphysical points or rather spiritual beings whose very nature it is to act. As the bent bow springs back of itself, so the monads naturally pass and are always passing into action without any aid but the absence of opposition (p. 122). Nor do they, like the atoms, act upon one another (p. 680); the action of each excludes that of every other. The activity of each is the result of its own past state, the determinator of its own future (pp. 706, 722). "The monads have no windows by which anything may go in or out" (p. 705). . . . .

From the Article (9 pages) *by* W. WALLACE, LL.D.

Hegel.— . . . . . . From all periods of the world,—from mediæval piety and stoical pride, Kant and Sophocles, science and art, religion and philosophy,—with disdain of mere chronology, Hegel gathers in the vineyards of the human spirit the grapes from which he crushes the wine of thought. The human mind coming through a thousand phases of mistake and disappointment to a sense and realization of its true position in the universe,—such is the drama which is consciously Hegel's own history, but is represented objectively in the field of the world as the process of spiritual history which the philosopher wakes into consciousness and reproduces in himself. The *Phenomenology* stands to the *Encyclopädie* somewhat as the dialogues of Plato stand to the Aristotelian treatises. It contains almost all his philosophy—but irregularly and without due proportion. The personal element gives an undue prominence to recent and contemporary phenomena of the philosophic atmosphere. It is the account given by an inventor of his own discovery, not the explanation of an outsider. It therefore to some extent assumes from the first the position which it proposes ultimately to reach, and gives, not a proof of that position, but an account of the experience (*Erfahrung*) by which consciousness is forced from one position to another till it finds rest in *Absolutes Wissen*. . . . .

From the Article (10 pages) *by* W. WALLACE, LL.D.

Schopenhauer.— . . . . . . Ever since the publication of *The World as Will and Idea* he had silently waited for some response to his message. He had uttered the word he felt himself charged to utter. As the years passed he noted down every confirmation he found of his own opinions in the writings of others, and every instance in which his views appeared to be illustrated by new researches. . . . The gathered ill-humour of many years, aggravated by the confident assurance of the Hegelians, found vent at length in the introduction to his next book, where Hegel's works are described as three-quarters utter absurdity and one-quarter mere paradox,—a specimen of the language in which during his subsequent career he used to advert to his three predecessors Fichte, Schelling, but above all Hegel. . . . .

From the Article (4½ pages) *by* ANDREW SETH, M.A.

Spinoza.— . . . . . . Spinoza's philosophy is a thorough-going antheism, which has both a naturalistic and a mystical side. The foundation of the system is the doctrine of one infinite substance, of which all finite existences are modes or limitations (modes of thought or modes of extension). God is thus the immanent cause of the universe; but of creation or will there can be no question in Spinoza's system. God is used throughout as equivalent to nature (*Deus sive natura*). The philosophical standpoint comprehends the necessity of all that is—a necessity that is none other than the necessity of the divine nature itself. To view things thus is to view them, according to Spinoza's favourite phrase, *sub specie æternitatis*. Spinoza's philosophy is fully considered in the article CARTESIANISM (see vol. v. p. 152 *sq.*). . . . .

From the Article (19 pages) *by* Professor LEWIS CAMPBELL, LL.D.

Plato.— . . . . . . Negation, falsity, contradiction, are three notions which Plato from his height of abstraction does not hold apart. His position is the converse of the Spinozistic saying, "Omnis determinatio est negatio." According to him, every negative implies an affirmative. And his main point is that true negation is correlative to true affirmation, much as he has said in the *Phædrus* that the dialectician separates kinds according to the "lines and veins of nature." The *Sophistes* is a standing protest against the error of marring the finely-graduated lineaments of truth, and so destroying the vitality of thought. . . . .

From the Article (10 pages) *by* Professor R. ADAMSON, LL.D.

Kant.— . . . . . . The great work of Kant absolutely closed the lines of speculation along which the philosophical literature of the 18th century had proceeded, and substituted for them a new and more comprehensive method of regarding the essential problems of thought, a method which has prescribed the course of philosophic speculation in the present age. The critical system has thus a twofold aspect. It takes up into itself what had characterized the previous efforts of modern thought, shows the imperfect nature of the fundamental notions therein employed, and offers a new solution of the problems to which these notions had been applied. . . . .

From the Article (7 pages) *by* WM. MINTO, M.A.

Mill.— . . . . . . Mill remarks that the uncertainty hanging over the very elements of moral and social philosophy proves that the means of arriving at the truth in those sciences are not yet properly understood. "And whither," he adds, "can mankind so advantageously turn, in order to learn the proper means, and to form their minds to the proper habits, as to that branch of knowledge in which by universal acknowledgment the greatest number of truths have been ascertained, and the greatest possible degree of certainty arrived at?" . . . .

From the Article (9 pages) *by* JOHN MORLEY, M.P.

Comte.— . . . . . . Lamennais, then in the height of his Catholic exaltation, persuaded Comte's mother to insist on her son being married with the religious ceremony, and as the younger Madame Comte apparently did not resist, the rite was duly performed, in spite of the fact that the unfortunate man was at the time neither more nor less than raving mad. To such shocking conspiracies against common sense and decency does ecclesiastical zealotry bring even good men like Lamennais. On the other hand, philosophic assailants of Comtism have not always resisted the temptation to recall the circumstance that its founder was once out of his mind,—an unworthy and irrelevant device, that cannot be excused even by the provocation of Comte's own occasional acerbity. . . . .

From the Article (3 pages) *on the life of*

Spencer.— . . . . . . But easiest of all is it to leave the relation of the unknowable "substance of Mind" to the unknowable "substance of Matter" (substance he throughout conceives as the unknowable substrate of phenomena) to the Unknowable, as he finally does. To the theory of knowledge Spencer contributes a "transfigured realism," to mediate between realism and idealism, and the doctrine that "necessary truths" acquired in experience and congenitally transmitted, are *a priori* to the individual, though *a posteriori* to the race, to mediate between empiricism and apriorism. It has already been explained, however, that the biological foundations of the latter doctrine are questionable. . . . .

[*It would be idle to attempt to multiply the extracts from the studies of philosophers which are dispersed through the pages of the Tenth Edition. See special articles,* ARISTOTLE, BACON, LOCKE, BERKELEY, NIETZSCHE, *&c.*]

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THE SUBLIMINAL SELF.

From the Article (3 pages) by Mrs HENRY SIDGWICK.

Spiritualism. . . . . . . The second class of phenomena, which we may call the automatic, consists in table-tilting and turning with contact; writing, drawing, &c., through the medium's hand; convulsive movements and involuntary dancing; entrancement, trance-speaking, and personation by the medium of deceased persons, attributed to temporary "possession"; seeing spirits and visions and hearing phantom voices. This class bears affinity to some of the phenomena of hypnotism and of certain nervous complaints, to certain epidemics of the Middle Ages, and to phenomena that have occurred at some religious revivals. According to quotations given by Chevreul, the divining-rod was used at the end of the 17th century for obtaining answers to questions, as table-tilting now is. In a third class must be placed the cure of disease by healing mediums. This cannot well be treated apart from mesmeric healing and "faith cures" and "mind cures," and belongs to medical psychology.

The class of automatic phenomena are much the commonest. The investigations of Carpenter on unconscious cerebration and of Faraday on unconscious muscular action have shown that it is not necessary to look outside the medium's own brain and organism for the explanation of such things as automatic writing and table-turning. It is about the matter communicated by these means that the controversy now turns. Spiritualists maintain that true information is thus given, probably unknown to the medium or other persons present, or at least expressed in a way obviously beyond their powers to originate. Another view, which is now gaining ground, is that the information in some exceptional cases does not come from the mind of the medium, but is due to the influence wrought on his mind by that of other persons, and more than this is not proved. . . . .

[PSYCHICAL RESEARCH, PSYCHOLOGY, HYPNOTISM, *and* NEUROPATHOLOGY *are but a few of the Articles in the Tenth Edition dealing with the fascinating subject of the Subconscious Self.*]

"POSSESSED OF A DEVIL."

From the Article (4½ pages) by E. B. TYLOR, *LL.D.*

Demonology. . . . . . . Thus the savage theory of demoniacal possession has for its natural result the practice of exorcism or banishment of the spirit as the regular means of cure, as where, to select these from hundreds of instances, the Antilles Indians in Columbus's time went through the pretence of pulling the disease off the patient and blowing it away, bidding it begone to the mountain or the sea or where the Patagonians till lately, believing every sick person to be possessed by an evil demon, drove it away by beating at the bed's head a drum painted with figures of devils.

That such modern savage notions fairly represent the doctrine of disease-possession in the ancient world is proved by the records of the earliest civilized nations. The very charms still exist by which the ancient Egyptians resisted the attacks of the wicked souls who, become demons, entered the bodies of men to torment them with diseases and drive them to furious madness. The doctrine of disease among the ancient Babylonians was that the swarming spirits of the air entered man's body, and it was the exorcist's duty to expel by incantations "the noxious neck-spirit," "the burning spirit of the entrails which devours the man" and to make the piercing pains in the head fly away "like grasshoppers" into the sky. (See *Records of the Past*, vols. i. iii., &c.; Birch's trans. of the Egyptian *Book of the Dead*, see below; Maspero, *Histoire Ancienne des Peuples de l'Orient*, p. 41; Lenormant, *La Magie chez les Chaldéens*, &c.) The transition stage of the ancient belief in the classical period of Greece and Rome is particularly interesting. The scientific doctrine of medicine was beginning to encroach upon it, but it was still current opinion that a fit was an attack by a demon ἐπίληψις = "seizure," hence English *epilepsy*), that fury or madness was demoniacal possession (δαιμονάω = to be possessed by an evil spirit, hence English *dæmoniac*, &c.), that madmen were "larvati," *i.e.*, inhabited by ghosts, &c. No record shows the ancient theory more clearly than the New Testament, from the explicit way in which the symptoms of the various affections are described, culminating in the patient declaring the name of his possessing demon, and answering in his person when addressed. . .

[*The subject of the savage belief in demons can be also studied in the Articles* ANIMISM, FETICHISM, LYCANTHROPY, *&c.*]

THE MYSTERY OF SLEEP.

From the Article (7 pages) by JAMES SULLY, *LL.D.*

Dream. . . . . . . Among the Cartesians the proposition, the mind is always thinking, became a leading tenet. Locke argues against this supposition. He contends that in sleep men do not always think, or they would be conscious of it. If it is asserted that they dream but they forget it, he replies it is "hard to be conceived" that "the soul in a sleeping man should be this moment busy a-thinking, and the next moment in a waking man not remember nor be able to recollect one jot of all those thoughts." To suppose that in sleep the soul thinks apart from the body involves the absurdity of a double mind, and is further contradicted by the irrationality of dreams (*Essay*, book ii. ch. i.). Locke was answered by Leibnitz in the *Nouveaux Essais*, who upheld the Cartesian affirmation, and maintained that during sleep the mind has always some "little perceptions" or "confused sentiments," though, according to his doctrine of unconscious perceptions, these need not become objects of conscious attention. That we never sleep without dreaming is further maintained by Kant in his *Anthropologie*, by Jouffroy and others. . . . .

[*The theories of hypnotic sleep are discussed in the Article* PHYSIOLOGY *in the Tenth Edition.*]

THE CONJUROR OF OLD.

From the Articles (16 pages) by E. B. TYLOR, *D.C.L., LL.D., F.R.S.*, J. ALGERNON CLARKE, T. NEVIL, *and* G. FAUR.

Magic. . . . . . . Whether or not the book of Exodus makes the earliest historical reference to this natural magic when it records how the magicians of Egypt imitated certain miracles of Moses "by their enchantments," it is known that the Egyptian hierophants, as well as the magicians of ancient Greece and Rome, were accustomed to astonish their dupes with optical illusions, visible representations of the divinities and subdivinities passing before the spectators in dark subterranean chambers. From the descriptions of ancient authors we may conjecture that the principal optical illusion employed in these effects was the throwing of spectral images of living persons and other objects upon the smoke of burning incense by means

It is in the Tenth Edition that are noted the systems of the great logicians Hutcheson, Condillac, Gilbert de la Poirée, Whately, Hamilton, &c.

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Will the Sun's Heat ever be Exhausted?

In this busy, matter-of-fact world we are apt to forget that the existence of the globe is subject to inexorable laws of Nature. We do not realise what the spectroscope has taught us: that the stars and planets are formed of materials identical with those that make up the Earth. We know that the heat of the Sun is declining. We have only to suppose a time at which it would be exhausted, and we are at once compelled to realise that the world would become uninhabitable. What are the scientific probabilities of such a catastrophe may be learned from the article NEBULAR THEORY, by Sir Robert Ball.

of concave metal mirrors. But, according to the detailed exposure of the tricks of the magicians given by Hippolytus (*Ref. Om. Hær.*, iv. 35), it appears that the desired effect was often produced in a simpler way, by causing the dupe to look into a cellar through a basin of water with a glass bottom standing under a sky-blue ceiling, or by figures on a dark wall drawn in inflammable material and suddenly ignited. The flashes of lightning and the rolling thunders which sometimes accompanied these manifestations were easy tricks, now familiar to everybody as the ignition of lycopodium and the shaking of a sheet of metal. The ancient methods described by Hippolytus (iv. 32) were very similar.

Spectral pictures or reflexions of moving objects, similar to those of the camera or magic lantern, were described in the 14th and 16th centuries. Thus, in the *House of Fame*, bk. iii., Chaucer speaks of "appearances such as the subtil tregetours perform at feasts"—pictorial representations of hunting, falconry, and knights jousting, with the persons and objects instantaneously disappearing; exhibitions of the same kind are mentioned by Sir John Mandeville, as seen by him at the court of "the Great Chan" in Asia; and in the middle of the 16th century Benvenuto Cellini saw phantasmagoric spectres projected upon smoke at a nocturnal exhibition in the Colosseum at Rome. . . . . . .

. . . .

In all ages a very popular magical effect has been the apparent floating of a person in empty space. An endless variety of ingenious apparatus has been invented for the purpose of producing such effects, and the present article would be incomplete without some reference to one or two of the more modern examples. A very pretty illusion of this kind is that originally produced under the title of "Astarte." A lady is brought forward, and after making her bow to the audience she retires to the back of the stage, the whole of which is draped with black velvet and kept in deep shadow. There she is caused to rise in the air, to move from side to side, to advance and retire, and to revolve in all directions. The secret consists in an iron lever, covered with velvet to match the background, and therefore invisible to the audience. This lever is passed through an opening in the back curtain and attached to a socket upon the metal girdle worn by the performer. The girdle consists of two rings, one inside the other, the inner one being capable of turning about its axis. By means of this main lever and a spindle passing through it and gearing into the inner ring of the girdle, the various movements are produced. A hoop is passed over the performer with a view to demonstrate her complete isolation, but the audience is not allowed to examine it. It has a spring joint which allows it to pass the supporting lever. Among illusions of this class there is probably none that will bear comparison with the "levitation" mystery produced by Mr Maskelyne. . . . . . .

[*Egyptian, Babylonian, Assyrian, Greek, and Roman Magic, and the history of Necromancy in England, are all described in the Tenth Edition. The student should also read the Articles* WITCHCRAFT, SPIRITUALISM, *&c.*]

PROFESSOR WILLIAM JAMES ON THE EMOTIONS.

From the Article (16 pages) by JAMES WARD, *LL.D., D.Sc., Professor of Mental Philosophy, Cambridge University.*

Psychology.— . . . . . . The nature of emotion and its relation to the various organic changes and bodily movements, commonly described as its expression or manifestation, have been continually under discussion since the appearance in 1884 of the notorious article, "What is an Emotion?" in which Professor W. James turned the views of Common Sense upside down. "Common Sense says: we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike." But, Professor James continues, "the hypothesis here to be defended says that this order of sequence is incorrect: that the one mental state is not immediately induced by the other, that the bodily manifestations must first be interposed between, and that the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble because we are sorry, angry, or fearful, as the case may be." In a word, whereas it is commonly supposed that the emotion precedes and produces the expression, it seems here to be maintained that the expression precedes and produces the emotion. But the sequence denied in the first case is a psychological sequence, the sequence maintained in the second is a physiological sequence. The subject's experiences of the bodily expressions is here the emotion, and these are physically, not psychically, determined. "They are sensational processes," says Professor James; "processes due to inward currents set up by physical happenings."

The new theory is, then, in part psychological, in part psychophysical. As to the first part, which the author calls "the vital point of the whole theory," it consists mainly in exposing the ambiguity of the phrase "bodily expression of an emotion"—a phrase which is liable to mislead us into fancying that emotion, like thought, may be antecedent to, or independent of, any expression or utterance. My fear or anger may chance to be *expressive* to another, but they are of necessity *impressive* to me. "A disembodied human emotion is a sheer nonentity." In so far as I have a certain emotion, in so far I have "the feelings of its bodily symptoms." This is true, not to say trite; but how do these symptoms arise? With this question we pass to the psychophysical side of the theory and here it becomes perplexing, and is itself perplexed, for to this question it is driven to return two distinct and divergent answers. First, we are told that it is not the emotion that gives rise to the bodily expression, but that, on the contrary, "the bodily changes follow directly the perception of the existing fact," it being beyond doubt "that objects do excite bodily changes by a preorganized mechanism." Again: "Each emotion is," for Professor James, "a resultant of a sum of elements, and each

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element is caused by a physiological process of a sort already well known. The elements are all organic changes, and each of them is *the reflex effect of the existing object.*" The old attempts at classification and description being contemptuously dismissed as belonging only to "the lowest stage of science," we are informed that now we step from a superficial to a deep order of inquiry. "The questions now are *causal*: 'Just what changes does this object and what changes does that object excite?' and 'How come they to excite these particular changes, and not others?'" But we have not had to wait for the James–Lange theory to raise these questions, and surely there are none that bring out its defects more glaringly. "Objects" that determine bodily changes by means of preorganized mechanism and without psychical interposition might fairly be taken to be physical objects; and indeed the whole process is expressly described as reflex. But only very slovenly physiologists talk of "objects" exciting reflexes: it is inexact even to say that sensations do so. All that reflex action requires is a *stimulus*. "The essence of a reflex action," says Foster, "consists in the transmutation, by means of the irritable protoplasm of a nerve-cell, of afferent into efferent impulses." Let Professor James be confronted first by a chained bear and next by a bear at large: to the one object he presents a bun, and to the other a clean pair of heels; or let him first be thrilled by a Beethoven symphony and then by a Raphael Madonna. Will he now undertake to account, in terms of stimuli and their reflex effects, for the very different results of the similar "causes" in the one case, or for the similar results of the very different "causes" in the other? . . . .

[*The Tenth Edition contains Articles on* APPARITIONS, CARTESIANISM, CASUISTRY, GNOSTICISM, PSYCHICAL RESEARCH, *&c.*]

If it is true to say that a general interest is most frequently aroused from particular instances, the foregoing extracts will probably inspire the reader, even though he has not yet included Philosophy in the subjects of his study, to seek a near acquaintance with the works of master philosophers. As an introduction to such a process a careful and agreeable excursion into the pages of the Tenth Edition will prove to be of the greatest use.

Whether a man's speculation leans towards the discovery of a practical point of view from which to consider all the great and all the small things of life, or towards finally satisfying a torturing doubt as to how far he may rightly credit the evidence of his senses—whether he cries because he feels sorry, or feels sorry because he cries—in short, whether he needs a philosophy, a system of psychology, or subordination to a creed for the sake of his mental repose, it is the *Encyclopædia Britannica* which will guide him to the wisest solution of his difficulty within the briefest period of time. Nor, on reflection, would it appear that an Index of more than half a million entries, which constitutes Volume 35 of the Tenth Edition, is a trifling recommendation to the work.

IN no book or books in the world is there to be found so complete a history of **GREAT THOUGHTS** and **GREAT THINKERS** as in the *Encyclopædia Britannica.* If the few extracts from the few articles on PHILOSOPHY and PSYCHOLOGY which it has been possible to quote have made the reader curious to ascertain the scope of the Tenth Edition, let him glance over the subjoined headings and realize how much in the Volumes can only be suggested here by bare enumeration.

Some Great Thinkers

of whom the *Encyclopædia Britannica* gives full accounts.

Heraclitus.
Democritus.
Socrates.
Aristippus.
Pythagoras.
Antisthenes.
Diogenes.
Spinoza.
Gottlieb.
Comte.
Berkeley.
Cousin.
Hamilton.
Epicurus.
Aristotle.
Seneca.
Epictetus.
Marcus Aurelius.
Plato.
St. Augustine.
St. Ambrose.
Fichte.
Schopenhauer.
Herbart.
Lewes.
Whately.
Thomas Aquinas.
Albertus Magnus.
Abelard.
Bernard of Clairvaux.
Grotius.
Hobbes.
Descartes.
Sir Thomas More.
Hegel.
Emerson.
Leibnitz.
Condillac.
Feuerbach.
Shaftesbury.
Bernard de Mandeville.
David Hume.
Adam Smith.
Dugald Stewart.
William Paley.
Jeremy Bentham.
Immanuel Kant.
John Stuart Mill.
Bacon.
Herbert Spencer.
Hutcheson.
Xenocrates.

Some Schools of Thought

discussed in the *Encyclopædia Britannica.*

Pythagoreanism.
The Sophists.
Platonism.
The Cynics.
The Peripatetics.
Epicureanism.
Stoicism.
Neoplatonism.
Mysticism.
Æsthetics.
Rationalism.
Manichæism.
Scholasticism.
Arabian Philosophy.
Cartesianism.
Casuistry.
Gnosticism.
Positivism.
Pessimism.
Socratic School.
Utilitarianism.
The Intuitional School.
The Alexandrian School.
The Cambridge Moralists.

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POPULAR PAGES

The Tortoise, as the Alderman of Bristol, well learned in eating, knows by much Experience, besides the delicious Calibash and Calipee contains many different kinds of Food; nor can the learned Reader be ignorant, that in Human Nature, tho' here collected under one general Name, is such prodigious Variety, that a Cook will have sooner gone through all the several Species of animal and vegetable Food in the World, than an Author will be able to exhaust so extensive a Subject.—FIELDING.

THE Encyclopædia Britannica has gained, and justly gained, a reputation for weighty scholarship and learning. It is well known that to its several editions the greatest thinkers of each generation have contributed of the wealth of their knowledge. But this is not the only light in which the work must be viewed. Great as is its value to the student, it has a further claim: it may fairly be called the greatest of all popular handbooks. Whatever be the subject of discussion, whether it be motor-cars or the latest appearance of the sea-serpent, the art of cookery, the cult of old furniture, the introduction of fans into Europe, the origin of the tall hat, or the future of the flying machine, it is but necessary to refer to its pages to satisfy curiosity, to ascertain fact, or to corroborate a suspicion.

Whatever be a man's hobby, or if he has none, whatever be his inclinations in the search for one, whether they take him to wood-carving, fretwork, entomology, botany, modelling, mechanics, book-plates, book-collecting, fossils, Roman remains, stamp-collecting or heraldry, here in the volumes of the Tenth Edition will he find that knowledge which will start him on his road to the greater specialized acquaintance with his chosen subject. The Antiquarian, too, eager to unearth some quaint fact of bygone times, will find the Encyclopædia Britannica a veritable storehouse of information on the subjects he loves; and with a growing sense of delight he will dig deeper and deeper for the treasures in its pages.

But to be really a popular and practical handbook of reference on all topics, something beside Thirty-four Volumes crowded with the most interesting and ably written articles is needed. There must be a Theseus to help us thread our way through this labyrinth of learning and amusement; such a guide is now offered to the possessor of the Encyclopædia Britannica. Unique in its learning, unique in its traditions, unique in its comprehensiveness, the Encyclopædia Britannica has the additional merit of an Index, which, with considerably more than half a million entries, is far the largest ever published. In the extracts which follow, a selection has been made from only a very few of the articles of a general and popular nature, but these will give the reader some notion of the variety of subjects which find a place in the Tenth Edition.

THE PASTIME OF KINGS

From the Article (13 pages) by E. D. BRICKWOOD, Major J. R. HUBBARD, W. T. CHESTER, and A. E. T. WATSON, Editor of the "Badminton Library."

Horse-racing.— . . . . . . The first distinct indication which contemporary history affords of horse-racing as a sport occurs in the "Description of the City of London" of William Fitzstephen (*c.* 1174). He says that in a certain "plane field without one of the gates (quidam planus campus re et nomine—*Smithfield*, quasi Smoothfield) every Friday, unless it be one of the more solemn festivals, is a noted show of well-bred (*nobilium*) horses exposed for sale. The earls, barons, and knights who are resident in the city, as well as a multitude of citizens, flock thither either to look on or buy." After describing the different varieties of horses brought into the market, especially the more valuable chargers (*dextrarios preciosos*), he says: "When a race is to be run by such horses as these, and perhaps by others which, in like manner, according to their breed are strong for carriage and vigorous for the course, the people raise a shout and order the common horses to be withdrawn to another part of the field. The jockeys, who are boys expert in the management of horses, which they regulate by means of curb bridles, sometimes by threes and sometimes by twos, as the match is made, prepare themselves for the contest. Their chief aim is to prevent a competitor from getting before them. The horses too, after their manner, are eager for the race; their limbs tremble, and impatient of delay they cannot stand still; upon the signal being given they stretch out their limbs, hurry on the course, and are borne along with unremitting speed. The riders, inspired with the love of praise and the hope of victory, clap spurs to their flying horses, lashing them with whips, and inciting them by their shouts" (see Stow's Translation). . . .

From time immemorial until within a very recent period jockeys rode in much the same style, though, of course, with varying degrees of skill. Many hundreds of boys exercised daily at Newmarket and other training grounds; . . . but though most of these lads find chances to distinguish themselves in trials and races for apprentices, probably not five per cent. grow into professional jockeys, increasing weight keeping many from the business, as a jockey has few chances unless he can ride well under 9 stone. . . . . At the beginning of the race the jockey used to stand in his stirrups, with the idea of removing weight from the horse's back and preserving perfect steadiness; towards the end of the race, if it were necessary to drive the animal home, he sat down "to finish."

This method used to be adopted in all countries, but recently a new system came into practice in America. Instead of putting the saddle in the middle of the horse's back, where it had always been placed previously, it was shifted forward on to the animal's withers. The jockey rode with very short stirrups, leaning forward over the neck and grasping the reins within a few inches of the horse's mouth. The appearance of this was ungainly in the extreme and an entire departure from ancient ways (though Fordham and a few other riders of great reputation had always sat much more forward than their contemporaries), but it was found to be remarkably effective. From the position thus adopted there was less resistance to the wind, and though the saving in this respect was largely exaggerated, in racing, where success or failure is frequently a matter of a very few inches, every little that helps is to be considered. The value of the discovery lay almost entirely in the fact that the horse carries weight better—and is therefore able to stride out more freely—when it is placed well forward on his shoulders. With characteristic conservatism the English were slow to

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For the titles of articles dealing with Commerce in the Tenth Edition, see p. 148.

accept the new plan. Several American jockeys, however, came to England. In all the main attributes of horsemanship there was no reason to believe that they were in the least superior to English jockeys, but their constant successes required explanation, and the only way to account for them appeared to be that horses derived a marked advantage from the new system of saddling. A number of English riders followed the American lead, and those that did so met with an unusual degree of success. Race-riding, indeed, was in a very great measure revolutionized in the closing years of the 19th century. . . .

[*The Articles* HORSE, CLUB, CIRCUS, BETTING, *should also be consulted in the Encyclopædia Britannica.*]

THE FIRST OF SPORTS.

From the Article (2 pages) by A. E. T. WATSON.

Hunting.— . . . . . . For pace and endurance no hunter approaches the English thoroughbred; and for a bold man who "means going," a steeplechase horse is often the best animal that could be obtained, for when he has become too slow to win races "between the flags," he can always gallop much faster, and usually lasts much longer, than animals which have not his advantage of blood. The quondam "'chaser" is, however, usually apt to be somewhat impetuous at his fences. But it must by no means be supposed that every man who goes out hunting desires to gallop at a great pace and to jump formidable obstacles, or indeed any obstacles at all. A large proportion of men who follow hounds are quite content to do so passively through gates and gaps, with a canter along the road whenever one is available. . . . .

The subject of scent is full of mysteries. The great authority already quoted, the eighth Duke of Beaufort, noted as a very extraordinary but well-known fact, for example, "that in nine cases out of ten if a fox is coursed by a dog during a run all scent ceases afterwards, even when you get your hounds to the line of the fox beyond where the dog has been." This is one of many phenomena which have always remained inexplicable. . . . . . .

[*In connexion with this extract should be read the Articles* HOUND, FOX, DEER, *&c., &c.*]

LAWFUL AND UNLAWFUL GAMBLING.

From the Articles by FRANCIS STORR, M.A., *and* W. F. CRAIES.

Games and Gaming.— . . . . . . Apart from statute, no games are unlawful in themselves. Games were originally made unlawful in the interest of the more useful military exercises which they threatened to supplant. The prohibition has been retained and extended on account of the vice of gambling, and severe penalties have been enacted against houses at which persons can play unlawful games. Betting-houses in general were brought within the definition of gaming-houses, and finally betting or gaming was prohibited in any public place. It must be admitted that these distinctions are based on a most invidious principle. Practically gambling is forbidden to the poor and connived at in the rich.

It may be asked, What games, as such, are lawful under these various statutes, and what are unlawful? The author of an excellent and amusing little work on *Gaming and Gamesters' Law*, gives the following as the result of a careful examination of all the Acts. The following are lawful games:—backgammon, bagatelle, billiards, boat-races, bowls, chess, cricket, croquet, curling, dominoes, draughts, fives, football, foot-races, golf, knurr and spell, putting the stone, quoits, rackets, rowing, skittles, tennis, whist, wrestling. The following are doubtful—boxing, cudgel-playing, and single-stick. The following are absolutely unlawful—ace of hearts, basset, dice (except backgammon), hazard, lotteries (except art-union lotteries), Pharaoh (or faro), boulet (or roly-poly). An Act of Geo. II., which prohibited horse-racing for prizes under £50 value, has since been repealed. . . . .

There was no new legislation between 1879 and 1902 for the punishment of gaming except the Betting and Loans (Infants) Act, 1892, passed at the instance of Lord Herschell, which makes persons guilty of misdemeanour who, with a view to profit, send to any one whom they know to be an infant a document inviting him to enter into a betting or wagering transaction. The Act was intended to protect lads at school and college from temptation by bookmakers. . . . .

In very many cases transactions with "outside stockbrokers" or "bucket shops" have been held to be mere wagers, although the contracts purported to give options to demand delivery or acceptance of the stocks dealt with; and the cover deposited by the "client" has been treated as a mere security for performance of the bargain, and recoverable if sued for in time, *i.e.*, before it is used for the purpose for which it is deposited. There was not up to 1902 any authoritative decision as to the application of the Gaming Act 1892 to transactions on the London Stock Exchange through a stockbroker who is a member of "the House"; but the same principle appears to be applicable where the facts of the particular deal clearly indicate that the intention was to make a mere time bargain, or to pay or receive differences only. . . . .

[*See also* ROULETTE, TRENTE-ET-QUARANTE, MONACO, *&c.*]

AMATEUR AND PROFESSIONAL.

From the Article by H. F. WILKINSON.

Athletic Sports.— . . . . . Till about 1860, all exercises wherein the feet played the principal part were rightly styled "pedestrianism." Up to that period all prizes, whether contended for by amateurs or professionals, were invariably in money. As the practice of the pastime, however, rapidly spread amongst the former, it was naturally found they were loth to compete on the same terms with, and for similar trophies as, the latter. Hence arose the modern definition of an amateur athlete, viz., "Any person who has never competed in an open competition, or for public money, or for admission money, or with professionals for a prize, public money, or admission money; nor has ever at any period of his life, taught, or assisted in the pursuit of athletic exercises as a means of livelihood; nor is a mechanic, artisan, or labourer." The moment this definition was brought into force a wide barrier arose between the two classes, and amateurs ceased to compete for money prizes amongst themselves, or against professionals, on any terms, unless they were willing to forfeit their status. A generic term was required for the new pastime, and in lieu of a better it was entitled "athletic sports," and its votaries "athletes." Hence the haphazard origin of the name. The birthplace of the modern pastime was undoubtedly the great universities and the military and public schools. . . . . . .

[*The Encyclopædia Britannica is particularly rich in information on sports.* CRICKET, FOOTBALL, BASEBALL, TENNIS, ROWING, CYCLING, BOWLS, CROQUET, *are but a few of the articles in the volumes.*]

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A RECREATION THAT MURDERS TIME.

From the Article (1½ *pages*) *by* HENRY JONES ("CAVENDISH").

Cards.— . . . . . . The time and manner of the introduction of cards into Europe are also moot points. The 38th canon of the council of Worcester (1240) is often quoted as evidence of cards having been known in England in the middle of the 13th century; but the games "de rege et regina" there mentioned were a kind of mumming exhibition (Strutt says chess). No queen is found in the earliest European cards.

. . . .

The earliest unquestionable mention of a distinct series of playing cards is the well-known entry of Charles or Charbot Poupart, treasurer of the household of Charles VI. of France, in his book of accounts for 1392 or 1393. It runs thus—"Donné à Jacquemin Gringonneur, peintre, pour trois jeux de cartes, à or et à diverses couleurs, ornés de plusieurs devises, pour porter devers le Seigneur Roi, pour son ébatement, cinquante-six sols parisis." From this entry it has hastily been concluded that Jacquemin Gringonneur (it is not certain whether Gringonneur was the painter's surname, or only his designation as a maker of *grangons*) invented cards; but the payment is clearly for painting, not for inventing them. . . . .

[*See* POKER, EUCHRE, WHIST (*by* "CAVENDISH"), BRIDGE, *&c.*]

HOBGOBLINS: EAST AND WEST.

From the Article (1½ *pages*) *by* WALTER HEPWORTH.

Fairies.— . . . . . . By this time, however, the influence of Eastern stories had been brought by travellers and crusaders to bear upon the traditions of the West, as well as that of the superstition next to be mentioned. To the elves and duergar of the northern mythology we must go for the origin of those little creatures that dance in the woods and meadows. The elves are divided into two classes, the light and the dark. It is related in the prose Edda that the gods reflected how the duergar animated the clay below the earth like maggots in flesh; and certainly, under different names, as brownie, cluricaune, kobbold, nisse, lutin, hobgoblin, beings of this kind, whether of the hill or wood, of the rock or stream, or of the household, have played a great part in the life of the peasantry of many countries. They are represented as of various characteristics and propensities. Their appearance and power are sometimes propitious, at other times baleful. "He that looks on them shall die," says Falstaff, and hides his face accordingly. Perhaps the leading features of their character with relation to man is a desire for fair human children, which, substituting abortive creatures, they practise many tricks to obtain. They are often represented as animated by a spirit of malicious mockery towards men, which is not, however, altogether malignant. In connexion with their fabled abode underground, it is to be noted that Chaucer makes Pluto and Proserpina king and queen of faery. . . . .

[*See also* WITCHCRAFT, DEMONOLOGY, MAGIC, DEVIL, *&c*]

HAIRDRESSING ABOUT THE TIME OF THE FIRST EDITION.

From the Article (26 *pages*) *by the* Rev. CHAS. BOUTELL.

Costume.— . . . . . During the forty years of this century that George III. was king, the fashions of dress passed through a remarkable variety of changes, each change contributing its own full share to the aggregate of extravagance and absurdity that was surpassed at no earlier period. About 1760 a passion for adorning the dress of both sexes began to revive; and it soon exercised its influence, reckless of all true taste, with unsparing energy—the head-dresses of the ladies, which about 1780 attained to the culminating degree of extravagant unsightliness, being its specially favoured field for operations. Fig. 49, faithfully reproduced from a contemporary engraving, shows under one of its least extravagant and tasteless forms a fashionable head-dress of the period in question. . . . .

Fig. 49.—Head-dress, c. 1780.

[*See also articles* BARBER, HAIR.]

A SECRET IN GLASS.

From the Article (2½ *pages*) *by* JAMES PATON *and* A. S. MURRAY.

Mirror.— . . . . . . The Venetians guarded with the utmost jealousy the secrets of their varied manufactures, and gave most exceptional privileges to those engaged in such industries. By their statutes any glass-maker carrying his art into a foreign state was ordered to return on the pain of imprisonment of his nearest relatives, and should he disobey the command emissaries were delegated to slay the contumacious subject. In face of such a statute Colbert attempted in 1664, through the French ambassador in Venice, to get Venetian artists transported to France to develop the two great industries of mirror-making and point-lace working. The ambassador, the bishop of Béziers, pointed out that to attempt to send the required artists was to court the risk of being thrown into the Adriatic, and he further showed that Venice was selling to France mirrors to the value of 100,000 crowns and lace to three or four times that value. Notwithstanding these circumstances, however, twenty Venetian glass-mirror makers were sent to France in 1665, and the manufacture was begun under the fostering care of Colbert in the Faubourg St Antoine, Paris. . . . .

[*The Article* GLASS (32 *pages*) *contains much interesting information on all forms of glass manufacture.*]

WHAT AN EPACT IS.

From the Article (18 *pages*) *by* THOMAS GALLOWAY, F.R.S., *and* W. S. B. WOODHOUSE.

Calendar.— . . . . . . Epact is a word of Greek origin, employed in the calendar to signify the moon's age at the beginning of the year. The common solar year containing 365 days, and the lunar year only 354 days, the difference is eleven; whence, if a new moon fall on the 1st of January in any year, the moon will be eleven days old on the first day of the following year, and twenty-two days on the first of the third year. The numbers eleven and twenty-two are therefore the epacts of those years respectively. . . . .

[*See also Articles* DIALLING, CHRONOLOGY, BIBLICAL CHRONOLOGY, TIME, *&c.*]

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WATER IN FICTION AND IN FACT.

From the Article (1½ pages) by H. R. MILL, D.Sc.

Whirlpool.— . . . . . . The various reports of travellers and descriptions of poetical "philosophers" as to the appearance of the Mälström were faithfully collated and thrown into stereoscopic relief by Edgar Allan Poe in his celebrated story. He describes how, with the rise of the tide, "the current acquired a monstrous velocity. . . . The vast bed of the waters, seamed and scarred into a thousand conflicting channels, burst suddenly into frenzied convulsions—heaving, boiling, hissing—gyrating in gigantic and innumerable vortices, and all whirling and plunging on to the eastward with a rapidity water never elsewhere assumes, except in precipitous descents. In a few minutes more there came over the scene another radical alteration. . . . The gyratory motions of the subsided vortices seemed to form the germ of another more vast. Suddenly—very suddenly—this assumed a distinct and definite existence, in a circle of over a mile in diameter. The edge of the whirl was represented by a broad belt of gleaming spray; but no particle of this slipped into the mouth of the terrific funnel, whose interior, as far as the eye could fathom it, was a smooth, shining, and jet-black wall of water, inclined to the horizon at an angle of some 45°, speeding dizzily round and round with a swaying and sweltering motion, and sending forth to the winds an appalling voice, half shriek, half roar, such as not even the mighty cataract of Niagara ever lifts up in its agony to heaven." . . . .

The facts which gave rise to the wild theories of mediæval geographers and the extravagant descriptions of early voyagers are impressive enough in themselves to rank amongst the grandest phenomena of nature. No one who has seen the tide-streams racing through the Pentland Firth at 12 miles an hour, now swirling along with a smooth dimpled surface, like molten glass, now meeting the counter-current and leaping high into the air in columns of water and spray, or who has heard the roar of Corrievreckan as the Atlantic tide rushes between Scarba and Jura against an easterly gale, will be disposed to deny the terrible danger to small open vessels or to wonder that horror strengthened imagination to the confusion and exaggeration of fact. . . . .

[*See also the Articles* ATMOSPHERE, EARTHQUAKE, CLIMATE, METEOROLOGY (70 pages), *in the last of which full accounts may be found of the Waterspout, the Cyclone, the Tornado, the Hurricane, &c.*]

HOW THE ROMANS BATHED.

From the Article (8½ pages) by Dr JOHN MACPHERSON.

Baths.— . . . . . . The tepidarium, again, was supplied from the frigidarium, and that from an aqueduct. In this way the heat which was not taken up by the first boiler passed on to the second, and instead of being wasted, helped to heat the second—a principle which has only lately been introduced into modern furnaces. In the case of the large thermæ the water of an aqueduct was brought to the *castellum*, or top of the building, and was allowed to descend into chambers over the hypocaustum, where it was heated and transmitted in pipes to the central buildings. Remains of this arrangement are to be seen in the baths of Caracalla. The general plan of such buildings will be more clearly understood after an examination of the accompanying illustrations. In the well-known drawing (Fig. 1) found in the baths of Titus, the name of each part of the building is inscribed on it. The small dome inscribed laconicum directly over the
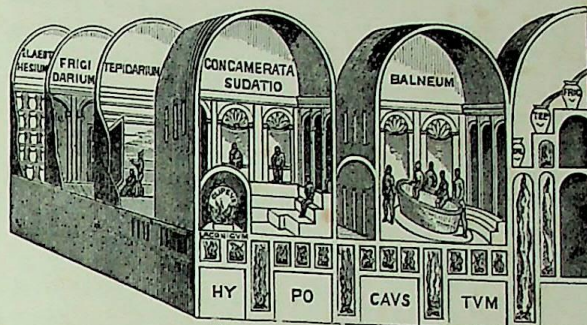
Fig. 1.—Roman Baths.

furnace, and having the clypeus over it, will be observed in the corner of the chamber named concamerata sudatio. The vessels for water are inscribed, according to their temperature, with the same names as some of the chambers, frigidarium, tepidarium, and calidarium. . . . . . .

[*See also* HYDROPATHY, *which is devoted to an account of the Therapeutical action of baths from a medical point of view.*]

THE LION OF ENGLAND.

From the Article (29 pages) by G. T. CLARK.

Heraldry.— . . . . . The identity of the lion of England with the leopard has been the subject of much controversy, and when Napoleon talked of driving the leopards into the sea he evidently used the word in disparagement of our national bearing. The early heralds, who probably were not zoologists, seemed to have confounded the lion with the leopard, and to have used the names according to the attitude of the animal. When rampant he was a lion, when in any other attitude, as passant, he was leo-pardé or a lion-as-a-leopard, but never drawn spotted like a real leopard. As the lion came more generally into use, and was borne in various attitudes, the allusion to the leopard was gradually dropped, though as late as the reign of Edward III. and Richard II. the royal crest was described as a leopard, and Henry V. had a Leopard herald. Among the greater barons of the 13th and 14th century, the lion was borne by the earls of Arundel, Cornwall, Devon, Hereford, Leicester, Lincoln, the Earl Marshal and the earl of Salisbury, as well as by scores of the lesser barons or knights. Sir Tristem, the knight of Lyonesse, bore a lion when

> "Mordant with his might,
> With a lance un-light,
> He smote him in the lion."

Fig. 86.

Fig. 87.

Fig. 88.

Fig. 89.

Lewis of Llanishen and Cromwell their cadet bore and bear sable, a lion rampant argent, a bearing still used by their cadets, the Lewises of Pennsylvania, who migrated above two centuries ago (Fig. 86).
Mathew of Castell-y-Mynach: argent, a lion rampant regardant sable (Fig. 87).
Everingham: gules, a lion rampant vair, crowned or.
Havering: argent, a lion rampant queue furchée gules, gorged azure (Fig. 88).
Capel: gules, a lion rampant between three cross crosslets, fitchy, or. In allusion to which Lord Capel is described at the siege of Colchester:—

> "There lion-like undaunted Capel stood,
> Beset with crosses in a field of blood."

Sir Simon de Felbrigge, K.G.: or, a lion saliant gules (Fig. 89). . . . . . .

[*This is but a mere fragment from the thirty-page Article dealing with the subject in all its historical and social significance.*]

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WHO GOES FIRST.

From the Article (7 pages) by F. DRUMMOND.

Precedence. . . . . . . The scale of general precedence for men is now in substantially the same condition as that in which it has been for between two and three centuries, and the political, to say nothing of the social, arrangements to which it was framed to apply have in the interval undergone an almost complete transformation. The consequence is that a good deal of it has come down to us in the shape of a survival, and has ceased to be of any practical use for the purpose it was originally designed to effect. While it comprises several official and personal dignities which are virtually obsolete and extinguished, it entirely omits the great majority of the members of Government in its existing form, and whole sections of society on a less exalted level, to whom it is universally felt that some rank and place at all events are both in public and in private justly due.

As we have already said, it accords no precedence whatever to the prime minister, whether as premier or as first lord of the treasury. In the same way it ignores not only the first lord of the admiralty but also the presidents of the Board of Trade and the Local Government Board, the postmaster-general, the vice-president of the council, and all the law officers of the crown. . . . .

[*See* ORDERS, PEERAGE, KNIGHTHOOD, BISHOP, BARON, BARONET, *&c.*]

TAHITIAN TRADE SONGS.

From the Article (3½ pages) by W. C. SMITH, LL.B.

Dance. . . . . . . So also in Tahiti there is a set of national ballads and songs, referring to many events in the past and present lives of the people. The fisherman, the woodsman, the canoe-builder, has each his trade song, which on public occasions at least is illustrated by dancing. But the accompaniment is often consciously intended, by an appeal to the ear, to regulate and sustain the excitement of the muscles. And a close relation will be found always to exist between the excellence of a nation's dancing and the excellence or complexity of its music and poetry. In some cases the performer himself sings or marks time by the clanking of ornaments on his person. In others the accompaniment consists sometimes of a rude chant improvised by those standing round, or of music from instruments, or of mere clapping of the hands, or of striking one stick against another or on the ground, or of "marking time," in the technical sense. The Tasmanians beat on a rolled up kangaroo-skin. The Kamchadales make a noise like a continuous hiccough all through the dance. The Andamans use a large hollow dancing-board, on which one man is set apart to stamp. Sometimes it is the privilege of the tribal chief to sing the accompaniment while his people dance. The savages of New Caledonia whistle and strike upon the hip. . . . .

[*The Articles* GYMNASTICS, BALLET, DERVISH, ALMEH, *should all be read by the lover of Dancing.*]

LEVIATHAN AS SCENT-MAKER.

From the Article on

Ambergris.— . . . . . . It is now known to be a morbid secretion formed in the intestines of the spermaceti whale (*Physeter macrocephalus*), and is found floating upon the sea, on the sea-coast, or in the sand near the sea-coast. It is met with in the Atlantic Ocean, on the coasts of Brazil and Madagascar; also on the coast of Africa, of the East Indies, China, Japan, and the Molucca Islands; but most of the ambergris which is brought to England comes from the Bahama Islands, Providence, &c. It is also sometimes found in the abdomen of whales, always in lumps in various shapes and sizes, weighing from ½ oz. to 100 or more lb. A piece which the Dutch East India Company bought from the King of Tydore weighed 182 lb. An American fisherman from Antigua found, inside a whale, about 52 leagues south-east from the Windward Islands, a piece of ambergris which weighed about 130 lb, and sold for £500 sterling. Like many other substances regarding the origin of which there existed some obscurity or mystery, ambergris in former times possessed a value, and had properties attributed to it, more on account of the source from which it was drawn than from its inherent qualities. Many ridiculous hypotheses were started to account for its origin, and among others it was conjectured to be the solidified foam of the sea, a fungoid growth in the ocean similar to the fungi which form on trees, the excreta of sea-birds, &c. . . . . .

[*See also Articles* PERFUMERY, BEAVER, CIVET, MUSK, OILS (ESSENTIAL), INCENSE, FRANKINCENSE, *&c.*]

A TAX ON BEARDS.

From the Article (2½ pages) by JOHN DORAN, Ph.D.

Beard.— . . . . . . When Peter the Great levied a tax on Russian beards, he was only following a precedent which once existed in England. Noble chins were assessed at a rouble; your commoner chin at a copec. It caused commotion, and there was much compulsory shaving of those who did not pay. Beards are not now valued in Russia. He who wears one seems to acknowledge that he has no very high place in the social scale. On the other hand, beards were highly treasured in Spain till the time of Philip V., who was unable to cultivate one. As was to be expected, this infirmity set the fashion of affecting the infirmity; but beardless dons were wont to exclaim with a sigh, "Since we have lost our beards, we have lost our souls!" Thus, they unconsciously adopted something akin to the superstition of the Roskolniki, a sect of schismatics who obstinately maintained that the divine image resided in the beard. Portugal was not behind Spain in appreciating the beard. When the Portuguese admiral, Juan de Castro, borrowed a thousand pistoles from the city of Goa, he lent in pledge one of his whiskers, saying, "All the gold in the world cannot equal this natural ornament of my valour." In these modern days one would not think much of the security of such a material guarantee, nor of the modesty of the admiral who might have the face to offer it. . . . .

[*The Article on* HAIR *should also be consulted in connexion with this extract.*]

The Index to the Tenth Edition of the *Encyclopædia Britannica* will guide the reader instantly to passages in the Thirty-four Volumes explaining the meaning of Isobars, Isotherms, Tendo Achillis, Iron Crown of Lombardy, Quaternions, Anacolouthon, Hæmoglobin.

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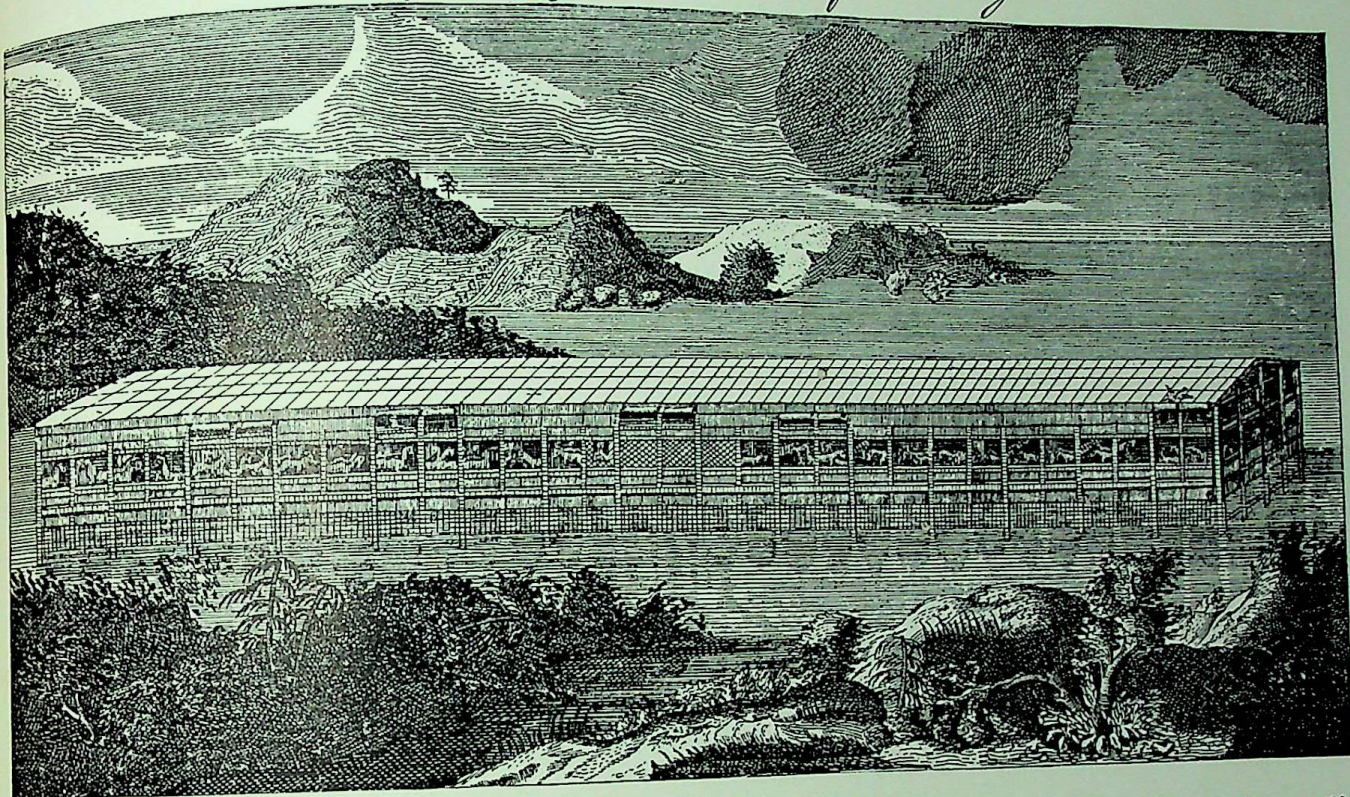
THE HISTORY OF PROGRESS ILLUSTRATED FROM A PLATE IN THE FIRST EDITION OF THE ENCYCLOPÆDIA BRITANNICA.

Fig. 1. NOAH'S ARK *floating on the waters of the Deluge* Plate XXXVIII.

The above illustration is reproduced from the First Edition of the *Encyclopædia Britannica*, and occurs as part of an Article entitled "Ark," in the first of the three volumes. The description is as quaint as the plate, and the following extract suggests in itself to-day an interesting reflection on the advance in thought that marks the period between the First and Tenth Editions of the *Encyclopædia Britannica*.

. . . By the defcription Mofes gives of the Ark it appears to have been divided into three ftories, each ten cubits or fifteen
feet high, and it is agreed on as moft probable that the loweft ftory was for the beafts, the middle for the food,
and the upper for the birds with Noah and his family; each ftory being fubdivided into different apartments,
ftalls, &c. Though Jofephus, Philo, and other commentators add a kind of fourth ftory under all the reft, being as
it were the hold of the veffel to contain ballaft &c. F. Kalmet thinks that what is here reckoned a ftory was no more
than what is called the keel of fhips, and ferved only for a confervatory of frefh water. . . . As to the number of
animals contained in the Ark, Buteo computes that it could not be equal to five hundred horfes; he even reduces the
whole to the dimenfions of fifty-fix pair of oxen. . . . As to the food in the fecond ftory it is obferved by Buteo from
Columella that thirty or forty pounds of hay ordinarily fuffices for an ox a day, and that a folid cubit of hay as ufually
preffed down in our hayricks weighs about forty pounds, fo that a fquare cubit of hay is more than enough for one ox
in one day. Now it appears that the fecond ftory contained a hundred and fifty thoufand folid cubits, which divided
between two hundred and fix oxen, would afford each more hay by two-thirds than he can eat in a year. Bifhop
Wilkins computes all the carnivorous animals equivalent as to the bulk of their bodies and their food to twenty-feven
wolves, and all the reft to two hundred and eighty beeves. . . . As to the third ftory nobody doubts of its being
fufficient for the fowls, with Noah, his fons and daughters. Upon the whole, the learned Bifhop remarks, that of the
two it appears much more difficult to affign the number and bulk of neceffary things to anfwer the capacity of the
Ark, than to find fufficient room for the feveral fpecies of animals already known to have been there. This he
attributes to the imperfection of our lift of animals, efpecially thofe of the unknown parts of the earth. . . . But it
muft be obferved that befides the places requifite for the beafts and the birds and their provifions, there was room
required for Noah to lock up houfehold utenfils, the inftruments of hufbandry, grains and feeds to fow the earth with
after the deluge; for which purpofe it is thought that he might fpare room in the third ftory for fix-and-thirty cabbins
besides a kitchin, a hall, four chambers, and a fpace about eight and forty cubits in length to walk in. . . . . .

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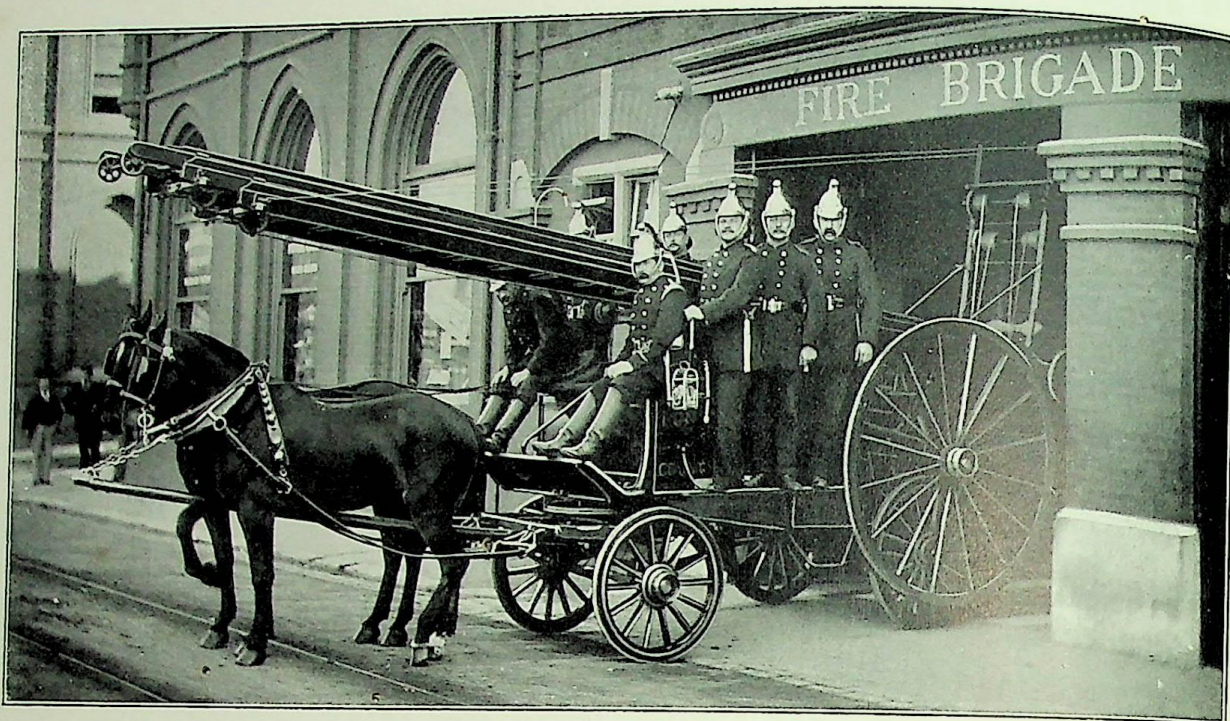
The pictures on this page are taken from the Article FIRE AND FIRE EXTINCTION (8 pages), by Captain L. de L. Wells, R.N., Chief Officer of the Metropolitan Fire Brigade, and General A. P. Rockwell, Boston, Massachusetts.

LONDON FIRE BRIGADE, HORSED ESCAPE.

FIG. 10.—Jumping Net.

Part of the disciplinary training for fire service consists in every candidate for the Brigade leaping from a standard height into a net of about 10 or 12 feet in diameter, made of stout tarred hemp and held distended by a number of strong men.

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BISHOP LATIMER AND THE LONG BOW.

From the Article (7 pages) by JAMES SHARPE, *Shrewsbury.*

Archery.— . . . . . . Several Acts were passed in the reign of Henry VIII. for the encouragement and promotion of archery; one ordered that butts should be erected and kept in repair in all townships, and that the inhabitants should practise shooting at them on holidays. The same Act directed that every able-bodied man, not being an ecclesiastic or a judge, should practise shooting with the long bow; and the guardians and employers of youth were ordered to bring up the boys in their charge to the practice of archery, neglect being punishable by fine. In this reign the practice of archery was strongly advocated from the pulpit by Bishop Latimer; and so jealous were the English of rival nations competing with them, that aliens were forbidden to use the long bow. The English victory at the battle of Flodden Field was due to the skill and courage of the archers. Edward VI. devoted much of his time to the practice of archery as an amusement; and his Journal, in which are many allusions to his successes and disappointments at matches, is still preserved in the British Museum. . . . .

[*The Article* ARMS *and* ARMOUR (6 *pages*) *should also be consulted in the Tenth Edition.*]

AN ANTIQUATED MECHANICAL CONTRIVANCE STILL IN USE.

From the Article on

Umbrella.— . . . . . . In Eastern countries from the earliest times the umbrella was one of the insignia of royalty and power. On the sculptured remains of ancient Nineveh and Egypt there are representations of kings and sometimes of lesser potentates going in procession with an umbrella carried over their heads; and throughout Asia the umbrella had, and still has, something of the same significance. The Mahratta princes of India had among their titles "lord of the umbrella." In 1855 the king of Burmah in addressing the governor-general of India termed himself "the monarch who reigns over the great umbrella-wearing chiefs of the Eastern countries." The baldachins erected over ecclesiastical chairs, altars, and portals, and the canopies of thrones and pulpits, &c., are in their origin closely related to umbrellas, and have the same symbolic significance. In each of the basilican churches of Rome there still hangs a large umbrella.

Among the Greeks and Romans the umbrella (σκιάς, σκιάδειον, *umbraculum, umbella*) was used by ladies, while the carrying of it by men was regarded as a sign of effeminacy . . . . . . and we find from allusions by Montaigne that in his day its employment as a sun-shade was quite common in Italy. The umbrella was not unknown in England in the 17th century, and was already used as a rain protector. Michael Drayton, writing about the beginning of the 17th century, says, speaking of doves:—

> "And, like umbrellas, with their feathers
> Shield you in all sorts of weathers."

Although it was the practice to keep an umbrella in the coffee-houses early in the 18th century, its use cannot have been very familiar, for in 1752 Colonel Wolfe, writing from Paris, mentions the carrying of them there as a defence against both rain and sun, and wonders that they are not introduced into England. The traveller Jonas Hanway, who died in 1786, is credited with having been the first Englishman who habitually carried an umbrella. . . . .

[*See also Articles* CANE, FAN, CARRIAGE.]

"THE MOUNTAIN OF LIGHT."

From the Article (5 pages) by Prof. JAMES NICOL.

Diamond.— . . . . . . The Koh-i-noor (fig. 18), the largest belonging to the British Crown, has also a singular history, corresponding to that of the country of its origin. The Indian legend tells that it was found in one of the Golconda mines near the Kishna river, and worn 5000 years ago by Karna, one of the heroes celebrated in the *Mahabharata*. It passed through many hands to Baber, the founder of the Mogul dynasty, in 1526, and was shown by his successor in 1665 to Tavernier, the French traveller. He describes it then as of the shape of a half egg, and weighing 280 carats, having been thus reduced by an unskilled stone-cutter from $793\frac{5}{8}$ carats, which it once weighed. In 1739 it passed to Nadir Shah, the Persian invader of India, who gave it the name of Koh-i-noor, or Mountain of Light, and from his successors in 1813 to Runjeet Sing, the ruler of Lahore. In 1849, on the annexation of the Punjab to British India, the Koh-i-noor was also surrendered and presented to the Queen in June 1850. It was exhibited in the Great Exhibition of 1851, and then weighed $186\frac{1}{16}$ carats, but has since been recut, with doubtful advantage, in the rose form, and is now $106\frac{1}{16}$ carats. Its lower side is flat, and undoubtedly corresponds to a cleavage plane. Hence it has been conjectured that it and the Russian Orloff diamond are portions of the original stone belonging to the Great Mogul, whilst a stone of 132 carats, obtained by Abbas Mirza at the storming of Coocha, in Khorassan, in 1832, may be a third fragment. This portion was long used by a peasant as a flint for striking fire. . . . .

[*The Tenth Edition also contains Articles on* JEWELLERY, EMERALD, RUBY, PEARL, SAPPHIRE, *and other precious stones.*]

A FABLED MONSTER.

From the Article (1½ pages) by W. E. HOYLE, *M.A.*

Sea Serpent.— . . . . . . A very interesting account of a monster almost certainly originating in one of these squids is that of Hans Egede, the well-known missionary to Greenland; the drawing by Bing, given in

Fig. 2.—Sea-serpent, as observed by Hans Egede.

his work, is reproduced here (fig. 2), along with a sketch of a squid in the act of rearing itself out from the water (fig. 3), an action which they have been observed in aquaria habitually to perform. Numerous other accounts seem to be explicable by this hypothesis. . . . . . .

[*See* ICHTHYOLOGY, SNAKES, DRAGON, *&c.*]

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VARIED as the subjects of the paragraphs have been in the preceding pages, even they have not sufficed to hint at the topics of those countless articles which give the *Encyclopædia Britannica* the claim to be considered a popular as well as a serious book of reference. Are there curious things about which you would like to read? Here are some selected at random from among hundreds of others contained in the Tenth Edition: **BANYAN TREE, UPAS TREE,** the great trees of **CALIFORNIA,** through the excavated trunks of which a four-horse coach can be driven, **PYGMIES** (famous little people of Africa), **GIPSIES** and their modes of life, **MAGIC MIRRORS, POISON RINGS, FANS, BRACELETS,** the customs of **APRIL FOOL, ORDEAL OF FIRE** in the Middle Ages, **DEODANDS, DIVINING-RODS, HORN BOOK, AUTOMATON BALLOONS, THUGS, COCKATRICE, HONEY-GUIDE, ROC,** the customs of **MAY-DAY, FLAGS** in ancient and modern times, the history of **OATH** and **VOWS, PANTOMIME, PEERAGE, FAIRS, WAX FIGURES, BOTTLES (ANCIENT), MUMMY.**

But why add to this list? for no mere catalogue could convey an impression of the inexhaustible variety of interests which the use of the Encyclopædia Britannica will both widen and deepen.

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How to tie **knots,**
How to make **gold lacquer for brass work,**
How to make **snow-shoes,**
How to make **photographs,**
How to do **sleight-of-hand tricks,**
How to collect **butterflies,**
How to make **putty,**
How to build **an ice-house,**
How to **shoe a horse,**
How **bells** are made,
How **matches** are made,
How to work **a magic lantern,**
How **nets** are made,
How to make **flies for fishing,**
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And this is but to mention one or two of those who will enjoy the Tenth Edition.

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MEDICINE

If you fly physic in health altogether, it will be too strong for your body when you shall need it; if you make it too familiar, it will work no extraordinary effect when sickness cometh.—BACON.

HE period which separates the first from the present edition of the Encyclopædia Britannica has witnessed changes as momentous and revolutionary in the Medical world as it has in that of Science. Indeed, the physicians and surgeons of to-day may rightly claim a title to which few, if any, of their predecessors could aspire: the title of scientific men. A century which opened to find Medical practice stultified by professional bigotry and prejudice so gross as to preclude the application of pure Science and rational methods to the treatment of disease, has closed to see Science triumphant. In Medicine, bacteriology, in the hands of men like Pasteur and Koch, has already gone far to diminish the unspeakable terror inspired in our forefathers by cholera, malaria, lupus, hydrophobia, diphtheria, and tuberculosis.

In Surgery the advances have been even more striking For this branch of Medical Science the introduction of anæsthetics, the great changes brought about by Lord Lister's antiseptic treatment of wounds, the discovery of the X-rays, and the perfection of the knowledge of human physiology and the economies of the body, have revolutionized the practice of the knife. In the early years of the 19th century the most insignificant operation was only undertaken at grave risk to the patient; to-day there is scarcely a part of the human body, even the delicate structure of the brain itself, which is denied to the skill of the surgeon as a field for operation. And with this astonishing advance of medical knowledge has come greater need for individual acquaintance with hygiene and the scientific conservation of the health. Modern life, with its multiplication of risks, its constant chances and changes, its travel, its toil, and its feverish haste, demands that each one of us should possess an amount of medical knowledge undreamt of by our peaceful forefathers, who regarded a trip to the Capital as an event of momentous importance in their existence. The Encyclopædia Britannica offers what no other work before the public can offer, a library of Medical knowledge comprised in a series of articles at once comprehensive in their range and yet freed from such technicalities as so often make scientific treatises of little utility to the layman. What subject, for instance, is of more perpetual interest to us all than the functions of food and the mysteries of human digestion? Such an Article as DIETETICS, from which a short extract appears below, gives vitally important information which no one can afford to be without; while if the reader desires to follow the subject further, he has but to turn to the exhaustive Article on PHYSIOLOGY, which explains for him that daily miracle which his digestive organs accomplish, recruiting blood and tissue, and enabling him to live on in health and strength.

And this is but one case in point. On whatever medical subject you appeal to the Tenth Edition you will find yourself fascinated by its wealth of information, and you will close the volume with the satisfaction of feeling that you have materially added to your store of learning. And to this complete survey of modern medicine is now added the incomparable advantage of an Index, which at once serves as a guide to the articles and elucidates those many technical points of Medical interest which daily occur as puzzles for all of us in our reading.

"CANCER-HAUNTED" HOUSES.

From the Article (2 pages) by ARTHUR SHADWELL, M.D.

Cancer.— . . . . . . Several years ago Mr Haviland investigated the distribution of cancer in England and Wales, and disclosed the existence of what he called "cancer fields," that is, districts in which the disease prevailed in a marked degree. Such districts were invariably associated with "seasonally flooded areas traversed by, or in close propinquity to, fully formed rivers," and were geologically characterized by alluvial and clayey soils. On the other hand, districts having the lowest mortality were found to be situated on elevated lands, well drained, not subject to floods, and geologically characterized by the Carboniferous limestone formation. He has more recently returned to the question, and by comparing a later period with the former one, has shown that this distribution remains constant, though the mortality has everywhere increased. Incidentally it may be remarked that the fact of the increase being generally distributed, and not confined to cancer districts, is an additional reason for regarding the increase as only apparent. Mr Haviland concludes that flooded clays are always associated with the highest mortality, and limestones with the lowest. The Thames valley, which is the greatest cancer field in England, forms the most striking illustration of this generalization. The river flows through a great variety of geological formations, but all the localities having the highest cancer mortality lie on clays, and are liable to floods; those having the lowest lie on limestone and chalk, and are, for the most part, not subject to flooding. Further light has been thrown upon the subject by the investigation of localities and houses to which the term "cancer-haunted" has been applied. Certain spots, groups of buildings and single houses, seem to harbour some special liability, and that independent of their size and age. An investigation carried out by Mr d'Arcy Power in a cancer district produced some remarkable examples. In one case, three men occupying the same house in succession all died of cancer since 1877, when the earliest case occurred. It was a new house then, built on land which had been pasture, and its first occupant was the first victim. The third was only thirty-six years of age. . . . .

Distribution.

[*The latest methods of operating are described in the general Article* SURGERY; *individual diseases are each discussed under their separate names. See, for instance,* APPENDICITIS, *p.* 194 *of this pamphlet.*]

THE MOST DREADED FOE OF ARMIES IN THE FIELD.

From the Article (5 pages) by ARTHUR SHADWELL, M.D.

Typhoid.— . . . . . . The susceptibility of

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individuals to the typhoid bacillus varies greatly. Some persons appear to be quite immune. The most susceptible age is adolescence and early adult life; the greatest incidence, both among males and females, is between the ages of 15 and 35. The aged rarely contract it. Men suffer considerably more than women, and they carry the period of marked susceptibility to a later age. Predisposing causes are believed to be debility, depression, the inhalation of sewer air by those unaccustomed to it, and anything tending to "lower the vitality," whatever that convenient phrase may mean. According to the latest theories, it probably means in this connexion a chemical change in the blood which diminishes its bactericidal power. Typhoid is a common sequela of influenza. The lower animals appear to be free from it in nature; but it has been imparted to rabbits and other laboratory animals. The disease is conveyed by various channels. There is no evidence that it is infectious in the sense in which small-pox and scarlet fever are infectious; and even persons in attendance on the sick do not often contract it when sufficient care is taken. . . . .

The prevention of typhoid among armies in the field is a problem of the gravest practical importance, but of special difficulty, not in principle but because of the conditions. The water is generally polluted, and soldiers are too thirsty to wait while it is boiled or filtered, even if the means are at hand. The sanitary arrangements are such as to ensure the saturation of the ground with excreta; flies and dust abound; personal cleanliness is impossible, and men feed and sleep together in the closest proximity. . . . . . Dr Leigh Carney in 1901 suggested a scheme for dealing systematically with the water-supply of an army.

One other point requires mention in connexion with prevention, namely, protective inoculation. This is performed with an anti-toxic substance prepared from dead cultures of bacilli, and has been tried on a fairly large scale, particularly on the British army in India and South Africa. . . . .

[*An Article on* YELLOW FEVER *will be found in Vol.* 33.]

SOIL AND DISEASE.

From the Article (5 pages) by Col. J. LANE NOTTER, M.D.

Hygiene.— . . . . . . The influence of different kinds of soil as a factor in the production of disease requires to be considered, in regard not only to the nature and number of the micro-organisms they contain, but also to the amount of moisture and air in them and their capacity for heat. The moisture in soil is derived from two sources—the rain and the ground water. Above the level of the ground water the soil is kept moist by capillary attraction and by evaporation of the water below, by rainfall and by movements of the ground water; on the other hand, the upper layers are constantly losing water by evaporation from the surface and through vegetation. When the ground water rises it forces air out of the soil; when it falls again it leaves the soil moist and full of air. The nature of the soil will largely influence the amount of moisture which it will take up or retain. In regard to water all soils have two actions, namely, permeability and absorbability. Permeability is practically identical with the speed at which percolation takes place; through clay it is slow, but increases in rapidity through marls, loams, limestones, chalks, coarse gravels, and fine sands, reaching a maximum in soil saturated with moisture. The amount of moisture retained depends mainly upon the absorbability of the soil, and as it depends largely on capillary action, it varies with the coarseness or fineness of the pores of the soil, being greater for soils which consist of fine particles. The results of many analyses show that the capacity of soils for moisture increases with the amount of organic substances present: decomposition appears to be most active when the moisture is about 4 per cent., but can continue when it is as low as 2 per cent., while it appears to be retarded by any excess over 4 per cent. Above the level of the ground water all soils contain air, varying in amount with the degree of looseness of the soil. Some sands contain as much as 50 per cent. of air of nearly the same composition as atmospheric air. The oxygen, however, decreases with the depth, while the carbon dioxide increases. . . . .

Soil and disease.

[HOSPITALS, *by* Sir HENRY BURDETT, *author of "The Hospitals and Asylums of the World,"* NURSING, HOSPITAL, AMBULANCE, SURGICAL IMPLEMENTS, *are some of the Articles in the Encyclopædia Britannica dealing with the care of the sick.*]

THE MOSQUITO THEORY OF MALARIA.

From the Article ($3\frac{1}{2}$ pages) by A. SHADWELL, M.D.

Malaria.— . . . . . . An old popular belief current in different countries, and derived from common observation, connected mosquitoes with malaria, and from time to time this theory found support in more scientific quarters on general grounds, but it lacked demonstration and attracted little attention. In 1894, however, Manson, arguing with greater precision by analogy from his own discovery of the cause of filariasis and the part played by mosquitoes, suggested that the malarial parasite had a similar intermediate host outside the human body, and that a suctorial insect, which would probably be found to be a particular mosquito, was required for its development. Following up this line of investigation, Ross in 1895 found that if a mosquito sucked blood containing the parasites they soon began to throw out flagellæ, which broke away and became free; and in 1897 he discovered peculiar pigmented cells, which afterwards turned out to be the parasites of æstivo-autumnal malaria in an early stage of development, within the stomach-wall of mosquitoes which had been fed on malarial blood. He further found that only mosquitoes of the genus *Anopheles* had these cells, and that they did not get them when fed on healthy blood. Then, turning his attention to the malaria of birds, he worked out the life-history of these cells within the body of the mosquito. "He saw that they increased in size, divided, and became full of filiform spores, then ruptured and poured out their multitudinous progeny into the body-cavity of their insect host. Finally, he saw the spores accumulate within the cells of the salivary glands, and discovered that they actually passed down the salivary ducts and along the grooved hypopharynx into the seat of puncture, thus causing infection in a fresh vertebrate host" (Sambon). To apply these discoveries to the malaria of man was an obvious step. . . . .

[*For a detailed account of the parasites which cause malaria in man, see Article* PATHOLOGY *of* 61 *pages in Vol.* 31.]

THE BIRTH OF ANTISEPTIC SURGERY.

From the Article on

Lister.— . . . . . . To illustrate this opinion, his work on the ligature may be taken. It had long been the universal practice of surgeons to employ threads of silk or

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flax for tying arteries, long ends being left to provide escape of the pus (invariably formed during the tedious process of the separation of the ligature) together with the portion of the arterial coats included in the knot. Lister hoped that "if, by antiseptic means, the thread were deprived of living microbes, it would no longer cause suppuration, but might be left with short cut ends to become embedded permanently among the tissues of the wound, which thus would be allowed to heal by primary union throughout. A trial of this method upon the carotid artery of a horse having proved perfectly successful, he applied it in a case of aneurysm in the human subject; and here again the immediate results were all that could be desired. But a year later, the patient having died from other causes, the necropsy showed remnants of the silk thread incompletely absorbed, with appearances around them which seemed to indicate that they had been acting as causes of disturbance. Thus was suggested to him the idea of employing for the ligature some material susceptible of more speedy absorption; and the antiseptic treatment of contused wounds having shown that dead tissue, if protected from putrefaction, is removed by the surrounding structures without the intervention of suppuration, he resolved to try a thread of some such nature. Catgut, which is prepared from one of the constituents of the small intestine of the sheep, after steeping in a solution of carbolic acid, was used in a preliminary trial upon the carotid artery of a calf. The animal was killed a month later, when, on dissection, a very beautiful result was disclosed. The catgut, though removed, had not been simply absorbed; *pari passu* with its gradual removal, fibrous tissue of new formation had been laid down, so that in place of the dead catgut was seen a living ligature embracing the artery and incorporated with it. The wound meanwhile had healed without a trace of suppuration. This success appeared to justify the use of the catgut ligature in the human subject, and for a while the results were entirely satisfactory. But though this was the case with the old samples of catgut first employed, which, as Lister was afterwards led to believe, had been "seasoned" by long keeping, it was found that when catgut was used fresh as it comes from the makers, it was unsuited in various ways for surgical purposes. The attempt by special preparation to obtain an article in all respects trustworthy engaged his attention from time to time for years afterwards. To quote the words of Sir Hector Cameron, who was for several years assistant to Lord Lister, it required "labour and toilsome investigation and experiment of which few can have any adequate idea." . . . .

[PASTEUR, Dr CHARCOT, CLAUDE BERNARD, VIRCHOW, *are some of those giants of the world of medicine to whom Biographical Articles are devoted in the Tenth Edition.*]

THE FUNCTIONS OF FOOD.

From the Article (5 pages) by W. O. ATWATER, *Ph.D., Professor of Chemistry.*

Dietetics.— . . . . . . Food is that which, taken into the body, builds tissue or yields energy. More specifically, food supplies the wants of the body in several ways:—(1) it forms the tissues and fluids of the body; (2) it repairs the waste of tissues; (3) it is stored in the body for future consumption; (4) it is consumed as fuel, its potential energy being transformed into heat or muscular energy or other forms of energy required by the body; and (5) in being consumed, it protects tissue or other food from consumption. The most healthful food is that which is best fitted to the needs of the user. To be adapted to his needs, the food must supply the different nutritive ingredients, or nutrients, in the kinds and proportions required by the body for building and repair and for supplying energy. It should also be in forms which the person can easily digest and which will "agree" with him. The cheapest food is that which furnishes the most nutriment at the least cost. The most economical food is that which is most healthful and cheapest. Ordinary food materials, such as meat, fish, eggs, potatoes, wheat, &c., consist of—*refuse, e.g.*, the bones of meat and fish, shells of shellfish, skin of potatoes, bran of wheat, &c.; *edible portion, e.g.*, the flesh of meat and fish, the white and yolk of eggs, wheat flour, &c. The edible portion consists of water and nutritive ingredients or nutrients.

The principal kinds of nutritive ingredients are *protein, fats, carbohydrates*, and *mineral matters*. The water, refuse (and salt of salted meat and fish), are here regarded as non-nutrients and, in comparing the values of different food materials for nourishment, are left out of account. The following are familiar examples of compounds of each of the four principal classes of nutrients:—

Protein.—The term protein is here used to include the nitrogenous nutrients of foods except the nitrogenous fat, namely, the proteids, *e.g.*, albumen (white of egg), casein (curd) of milk, myosin of muscle (lean meat), gluten of wheat, &c.; and the non-proteids, including the so-called extractives (*e.g.*, creatin) of meats and the amides (*e.g.*, asparagin), and allied compounds of vegetables and fruits.

Fats.—Fat of meat; fat (butter) of milk, olive oil, oil of corn, wheat, &c. (Here are included the nitrogenized fats, as lecithin.)

Carbohydrates.—Sugars, starches, cellulose (woody fibre), &c.

Mineral Matters.—Phosphates, sulphates, and chlorides of potassium, sodium, calcium, &c.

Protein forms tissue (muscle, tendon, &c.) and fat, and serves as fuel. Fats form fatty tissue (not muscle, &c.) and serve as fuel. Carbohydrates are transformed into fat and serve as fuel. All these nutrients yield energy in the form of heat and muscular power. In being themselves burned to yield energy, the nutrients protect each other from being consumed. The protein and fats of body tissue are used like those of food. An important use of the carbohydrates and fats is to protect body tissue (muscle, &c.) from consumption. What compounds are especially concerned in the production of intellectual or nervous energy is not known. The idea that fish is especially rich in phosphorus and valuable as brain food has no foundation in observed fact. . . . .

[*The whole subject of Nutrition and the Economics of Digestion is discussed in the sixteen-page Article by* Sir WILLIAM TURNER, *M.B., LL.D., F.R.S.*]

TYPHOID GERMS KILLED BY LIGHT.

From the Article (19 pages) by H. MARSHALL WARD, *F.R.S., Professor of Botany, Cambridge; and* ROBERT MUIR, *M.D., Professor of Pathology, Glasgow.*

Bacteriology. . . . . . . Much as the decade from 1880-90 abounded with investigations on the reactions of bacteria to heat, so the following decade was remarkable for discoveries regarding the effects of other forms of radiant energy. The observations of Downes and Blunt in 1877 left it uncertain whether the bactericidal effects in broth cultures exposed to solar rays were due to thermal action or not. Further investigations, in which Arloing, Buchner, Chmelewski, and others took part, have led to the proof

Bacteria and light.

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that rays of light alone are quite capable of killing these organisms. The principal questions were satisfactorily settled by Marshall Ward's experiments in 1892–93, when he showed that even the spores of *B. anthracis*, which withstand temperatures of 100° C. and upwards, can be
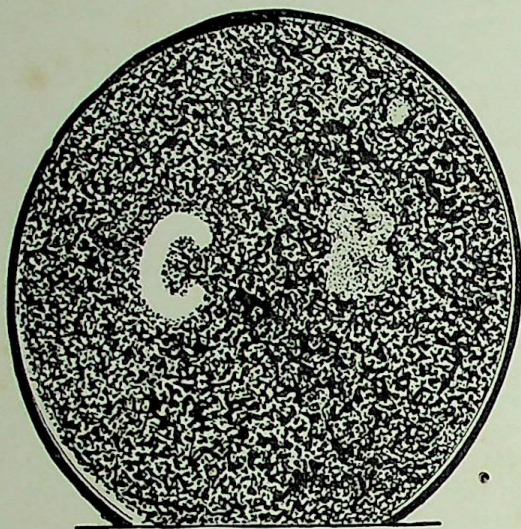
FIG. 7.—A plate-culture of a bacillus which had been exposed for four hours, on 30th March, behind a zinc stencil-plate, in which the letters C and B were cut. The light had to traverse a screen of water before passing through the C, and one of Aesculin (which filters out the blue and violet rays) before passing the B. The plate was then incubated, and, as the figure shows, the bacteria on the C-shaped area were all killed, whereas they developed elsewhere on the plate (traces of the B are just visible to the right) and covered it with an opaque growth. (*Original.*)

killed by exposure to rays of reflected light at temperatures far below anything injurious, or even favourable to growth. He also showed that the bactericidal action takes places in the absence of food materials, thus proving that it is not merely a poisoning effect of the altered medium. The principal experiments also indicate that it is the rays of highest refrangibility—the blue-violet and ultra-violet rays of the spectrum—which bring about the destruction of the organisms (Fig. 7). . . . .

[MEDICINE, PHARMACOLOGY, YELLOW FEVER, FEVER, INSANITY, HYDROPATHY, HYGIENE, HYPNOTISM *and* VACCINATION, *are some of the Articles on medical subjects.*]

A SOCIETY DISEASE.

From the Article (8 pages) *by* A. SHADWELL, M.D.

Influenza. . . . . . . The bacteriology of influenza is discussed in its proper place under PATHOLOGY (*Parasitic Diseases*). The disease is often called Russian influenza, and its origin in 1889 suggests that the name may have some foundation in fact. According to information collected by Dr Parsons, it came to Europe by way of Siberia and Russia, having been first recognized in Central Asia. A writer, who saw the epidemic break out in Bokhara, is quoted by him to the following effect:—"The summer of 1888 was exceptionally hot and dry, and was followed by a bitterly cold winter and a rainy spring. The dried-up earth was full of cracks and holes from drought and subsequent frost, so that the spring rains formed ponds in these holes, inundated the new railway cuttings, and turned the country into a perfect marsh. When the hot weather set in the water gave off poisonous exhalations, rendering malaria general." . . .

[TUBERCULOSIS, BRONCHITIS, PNEUMONIA, PLEURISY, ASTHMA, CATARRH, *and* PHTHISIS *are each the subject of a special Article in the Encyclopædia Britannica.*]

HOW TO LIVE LONG

From the Article (3 pages) *by* T. G. M'KENDRICK, M.D., LL.D., F.R.S.

Longevity. . . . . . . What are the physiological conditions in the human being that determine longevity? In the first place, there is the influence of heredity. Certain peculiarities of tissue are transmitted from parent to offspring that determine whether or not the tissue will remain for a lengthened period of time in a normal condition, or whether it will quickly yield to external influences and take on an abnormal action. As the life of the body is really the sum of the lives of its constituent parts, or, in other words, of the cellular elements composing it, it is evident that anything affecting the healthy action of these elements will affect the life of the body as a whole. In some individuals the tissues have what may be termed a hereditary taint, by which is meant a want of stability, so that they pass readily from a normal into an abnormal condition. . . . .

[*The reader should also see* THERAPEUTICS *by* Sir T. LAUDER BRUNTON, *and* DIETETICS (*see p.* 191 *of this pamphlet.*)]

The Value of the Index in Medical Reading

In no subject of study is the layman confronted with so many difficulties as in that of Medicine. The number of technical terms which are freely used by medical men, repeated in the Daily Press, in the Magazines, and in the Public Reports on Health, Sanitation, &c., and in the Blue-books issued by the Local Government Board, are constant stumbling-blocks to the uninitiated. Take a word like MYXŒDEMA. How many of us, who are not professionally engaged in the study of disease, have the slightest idea of its meaning? Let us see how the New Index will help us.

Myxœdema (disease) **28** 362c; **31** 562c.

Here are extracts from the passages alluded to in the Index:—

. . . . . . The disease Myxœdema, which was first described by Gull in 1873, was shown by Ord in 1878 to be due to degenerative changes in the thyroid gland. It affects both sexes, but chiefly females, and is characterised by a peculiar puffy appearance of the face and hands, shedding of the hair, a low temperature, and mental hebetude. . . . .

In 1884 Horsley, by removal of the thyroid gland of monkeys, produced in them a chronic myxœdema, a cretinoid state, the exact image of the disease in man—the same symptoms, course, tissue-changes, mental and physical hebetude, the same alterations of the excretions, the temperature, and the voice. . . .

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A TROPICAL DISEASE.

From the Article by ARTHUR SHADWELL, *M.D.*

Beri-Beri.— . . . . . . The symptoms are mainly those of peripheral neuritis with special implication of the phrenic and pneumo-gastric nerves. There is usually a premonitory stage, in which the patient is languid, easily tired, depressed, and complains of numbness, stiffness, and cramps in the legs; the ankles are œdematous and the face is puffy. After this, pronounced symptoms set in rapidly, the patient suddenly loses power in the legs and is hardly able to walk or stand; this paresis is accompanied by partial anæsthesia, and by burning or tingling sensations in the feet, legs, and arms; the finger-tips are numb, the calf muscles tender. These symptoms increase; the œdema becomes general, the paralysis more marked; breathlessness and palpitation come on in paroxysms; the urine is greatly diminished. There is no fever, unless it is of an incidental character, and no brain symptoms arise. The patient may remain in this condition for several days or weeks, when the symptoms begin to subside. On the disappearance of the œdema the muscles of the leg are found to be atrophied. Recovery is very slow, but appears to be certain when once begun. When death occurs it is usually from syncope through over-distension of the heart. The mortality varies greatly, from 2 to 50 per cent. of the cases. . . . .

[*The Articles* (17 *pages*) *on* PLAGUE *give the history of that terrible disease, and of the fatal outbreak in India in* 1900.]

THE USE OF ANTITOXINS.

From the Article (4 *pages*) *by* ARTHUR SHADWELL, *M.D.*

Diphtheria.— . . . . . . Since antitoxin was introduced in 1894 it has overshadowed all other methods of treatment. We owe this drug originally to the Berlin school of bacteriologists, and particularly to Dr Behring. The idea of making use of serum arose about 1890, out of researches made in connexion with Metschnikoff's theory of phagocytosis, by which is meant the action of the phagocytes or white corpuscles of the blood in destroying the bacteria of disease. It was shown by the German bacteriologists that the serum or liquid part of the blood plays an equally or more important part in resisting disease, and the idea of combating the toxins produced by pathogenic bacteria with resistant serum injected into the blood presented itself to several workers. The idea was followed up and worked out independently in France and Germany, so successfully that by the year 1894 the serum treatment had been tried on a considerable scale with most encouraging results. Some of these were published in Germany in the earlier part of that year, and at the International Hygienic Congress, held in Budapest a little later, Dr Roux, of the Institut Pasteur, whose experience was somewhat more extensive than that of his German colleagues, read a paper giving the result of several hundred cases treated in Paris. When all allowance for errors had been made, they showed a remarkable and even astonishing reduction of mortality, fully confirming the conclusions drawn from the German experiments. This consensus of independent opinion proved a great stimulus to further trial, and before long one *clinique* after another told the same tale. The evidence was so favourable that Professor Virchow—the last man to be carried away by a novelty—declared it "the imperative duty of medical men to use the new remedy" (*The Times*, 19th October 1894). Since then an enormous mass of facts has accumulated from all quarters of the globe, all testifying to the value of antitoxin in the treatment of diphtheria. The experience of the hospitals of the London Metropolitan Asylums Board for five years may be given as a particularly instructive illustration, because it represents a prolonged experiment on an immense scale, and because the mortality was already comparatively low in those hospitals before the use of antitoxin. . . . .

Treatment.

[*For a description of the Micro-organism see Article* PATHOLOGY *in Vol.* 31.]

THE REFORM OF ASYLUMS

From the Article (7 *pages*) *by* A. WOOD RENTON *and* FREDERICK PETERSON, *M.D.*:

Insanity.— . . . . . . The modern hospital for the insane does credit to latter-day civilization. Physical restraint is no longer practised. The day of chains—even of wristlets, covered cribs, and strait-jackets—is past. Neat dormitories, cosy single rooms and sitting and dining rooms, please the eye. In the place of bare walls and floors and curtainless windows, we observe pictures, plants, rugs, birds, curtains, and in many asylums even the barred windows have been abolished. Some of the wards for milder patients have unlocked doors. Many patients are trusted alone about the grounds and on visits to neighbouring towns. An air of busy occupation is observed in sewing rooms, schools, shops, in the fields and gardens, employment contributing not only to economy in administration, but to improvement in mental and physical conditions. The general progress of medical science in all directions has been manifested in the department of psychiatry by improved methods of treatment, in the way of sleep-producing and alleviating drugs, dietetics, physical culture, hydrotherapy, and the like. . . . .

[*Literature has often effected great reforms. In connection with this extract see the biography* (*Vol.* 20) *of* CHARLES READE.]

THE DISCOVERY OF ANÆSTHETICS.

From the Article by Dr. JAMES O. AFFLECK, *Examiner, Royal College of Physicians, Edinburgh.*

Anæsthesia.— . . . . . . In 1818 Faraday showed that the inhalation of the vapour of sulphuric ether produced anæsthetic effects, similar to those of nitrous oxide gas; and this property of ether was also shown by the American physicians, Godman (1822), Jackson (1833), Wood and Bache (1834).

These observations, however, appear to have been regarded in the light of mere scientific curiosities and subjects for lecture-room experiment, rather than as facts capable of being applied practically in the treatment of disease, till December 1844, when Dr Horace Wells, a dentist of Hartford, Connecticut, underwent in his own person the operation of tooth extraction while rendered insensible by nitrous oxide gas. Satisfied, from further experience, that teeth could be extracted in this way without pain, Dr Wells proposed to establish the practice of painless dentistry under the influence of the gas; but in consequence of an unfortunate failure in an experiment at Boston, he abandoned the project. On 30th September 1846, Dr Morton, a dentist of Boston, employed the vapour of sulphuric ether to procure general anæsthesia in a case of tooth extraction, and thereafter administered it in cases requiring surgical operation with complete success. This great achievement marked a new era in surgery. Operations were performed in America in

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numerous instances under ether inhalation, the result being only to establish more firmly its value as a successful anæsthetic. The news of the discovery reached England on 17th December 1846. On 19th December, Mr Robinson, a dentist in London, and on the 21st, Mr Liston, the eminent surgeon, operated on patients anæsthetized by ether; and the practice soon became general both in Great Britain and on the Continent. . . . .

[*All that anæsthetics have done for Modern* SURGERY *is told at length in the Article under that title in Vol.* 33.]

THE DANGER OF WATER

From the Article (4 *pages*) *by* ARTHUR SHADWELL, *M.D.*

Cholera.— . . . . . . Of all the means of local dissemination, contaminated water is by far the most important, because it affects the greatest number of people, and this is particularly the case in places which have a public water-supply. A single contaminated source may expose the entire population to danger. All severe outbreaks of an explosive character are due to this cause. It is also possible that the cholera poison multiplies rapidly in water under favourable conditions, and that a reservoir, for instance, may form a sort of forcing-bed. . . . .

. . . .

But water, though the most important condition, is not the only one affecting the incidence of cholera. The case of Grimsby furnished a striking lesson to the contrary. Here the disease obtained a decided hold, in spite of a pure water-supply, through the fouling of the soil by cesspools and defective drainage. At Havre also its prevalence was due to a similar cause. Further, it was conclusively proved at Grimsby that cholera can be spread by sewage-fed shell-fish. Several of the local outbreaks in England were traced to the ingestion of oysters obtained from the Grimsby beds. In short, it may be said that all insanitary conditions favour the prevalence of cholera in some degree. Preventive inoculation with an attenuated virus was introduced by M. Haffkine, and has been extensively used in India, with considerable appearance of success so far as the statistical evidence goes. . . .

[*The micro-organism causing Cholera, and identified by Professor Koch, is described in the Article* PATHOLOGY (61 *pages*) *in Vol.* 31.]

A DANGEROUS NATURAL FORCE.

From the Article (4 *pages*) *by* ARTHUR SHADWELL, *M.D.*

Hypnotism. . . . . . . In a sense the phenomena of hypnotism have probably been known from time immemorial. They appear to form part of certain traditional practices of great antiquity in the East, and traces of them may be found in classical and mediæval times, but they were first brought forward in a systematic way by Friedrich Anton Mesmer, a Viennese physician who flourished in the latter half of the 18th century. He stumbled across them accidentally in the year 1774, while treating a young woman for hysteria by the application of metal plates. In 1778 he came to Paris, where he soon attracted attention and acquired a vogue which his professional colleagues could not forgive and have not to this day forgiven. No doubt he practised in a highly theatrical and unorthodox manner, and made a great deal of money by doing so, but he did not profess to cure everything, as some modern hypnotists do, and expressly disclaimed any value for his treatment in organic disease. The methods of producing the mesmeric "crisis" were essentially the same as those used to-day for putting persons into the hypnotic state, namely, various ways of fixing the visual and mental attention. "His usual method was to seat himself opposite the patient with knees touching, the patient regarding him fixedly." The effects were also essentially the same —trance, somnambulism, subordination of the will, and impressibility. Mesmer called it animal magnetism, and formulated an elaborate theory on the subject, but most of his propositions are fantastic and unintelligible, though some of his speculations have been curiously confirmed in later years. He had many followers, who carried on the practice after his retirement in 1785, and notably the marquis de Puységur, who anticipated nearly everything that has been done since. After the Revolution, which put a temporary stop to animal magnetism, it was taken up again and flourished widely on the Continent. The Berlin Academy of Science offered a prize for the best essay on the subject. Mesmerism was practised in the hospitals, and minor operations were performed under mesmeric anæsthesia. That was about 1820. In 1831 a commission, appointed by the Académie de Médecine, issued a very favourable report after an inquiry lasting five years. The reality of the phenomena, including somnambulism and its effects, was declared to have been proved, but a second commission in 1837 reversed the decision and threw the whole thing into discredit. The next phase was the re-discovery of what had been discovered before, with the addition of a new name and a new theory. . . . .

[*For a discussion of the Theories of Hypnotism, see the Article* PHYSIOLOGY (43 *pages*) *in Vol.* 31.]

A NEW ILLNESS.

EVERY THIRD MAN HAS IT, SLIGHTLY.

From the Article by A. SHADWELL, *M.D.*

Appendicitis.— . . . . . . The appendix is a narrow tube, normally about the size of a goose quill, and from 1 inch to 8 or 9 inches in length. The average length is 3 inches. It terminates in a blunt point, and from its worm-like shape is called the *appendix vermiformis*. It is an appendage of the large intestine, into which it opens. It is not known to perform any functions, and is regarded as the degenerate relic, surviving in man and other mammals, of an earlier form of intestine. Owing to its shape, character, and situation the appendix is frequently the seat of morbid changes. They have been observed in one-third of a number of bodies examined *post-mortem*. Inflammation is set up in various ways. Foreign bodies passing down the intestinal canal may find their way into the appendix and lodge there. This was formerly believed to be the chief cause of mischief; hence the warning, familiar to every child, against the danger of swallowing cherry stones and other small, hard objects. Extended knowledge, however, has shown that such foreign bodies are only present in a small minority of cases. More frequently the tube is found blocked by hardened fæces of undigested particles of food, such as nuts, cheese, fibrous vegetable matter, and other imperfectly masticated substances. Sometimes calcareous concretions are formed round a nucleus furnished by some small body. Inflammation may occur, however, without any of these things. The gut may be twisted or otherwise strangulated, leading to gangrene; or the orifice may be closed in a similar manner, so that the tube becomes greatly distended with mucus, which can find no outlet; or ulceration of tuberculous origin may occur. . . . .

[*The astounding advances of modern Surgery are chronicled in the Article* SURGERY *in Vol.* 33.]

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This is one of the ten full-page plates from the sixty-page Article **PATHOLOGY** in the Tenth Edition.

Fig. 10.—Embolic Infarct of Spleen. The pale half of the figure corresponds to the dead tissue or infarct. *a*, Empty sinuses of spleen; *b*, the infarct; *c*, pigment around it; *d*, splenic sinuses in neighbouring living tissue; *e*, a trabecula. (× 40 diams.)

For an account of the diseases of the spleen, see the Articles VASCULAR SYSTEM, MALARIA, WOOL-SORTER'S DISEASE.

Fig. 12.—Catarrhal Nephritis, showing fatty degeneration of epithelium of the tubes of the kidney. *a*, *a*, Convoluted tubes filled with fatty epithelium; *b*, *b*, convoluted tubes with epithelium still in stage of cloudy swelling; *c*, glomerulus very swollen, granular, and probably œdematous; *d*, a few catarrhal cells in the intracapsular space; *e*, spindle-shaped lymph-spaces in interstitial tissue filled with oil globules; *f*, same in Bowman's capsule. (× 350 diams., stained with perosmic acid.)
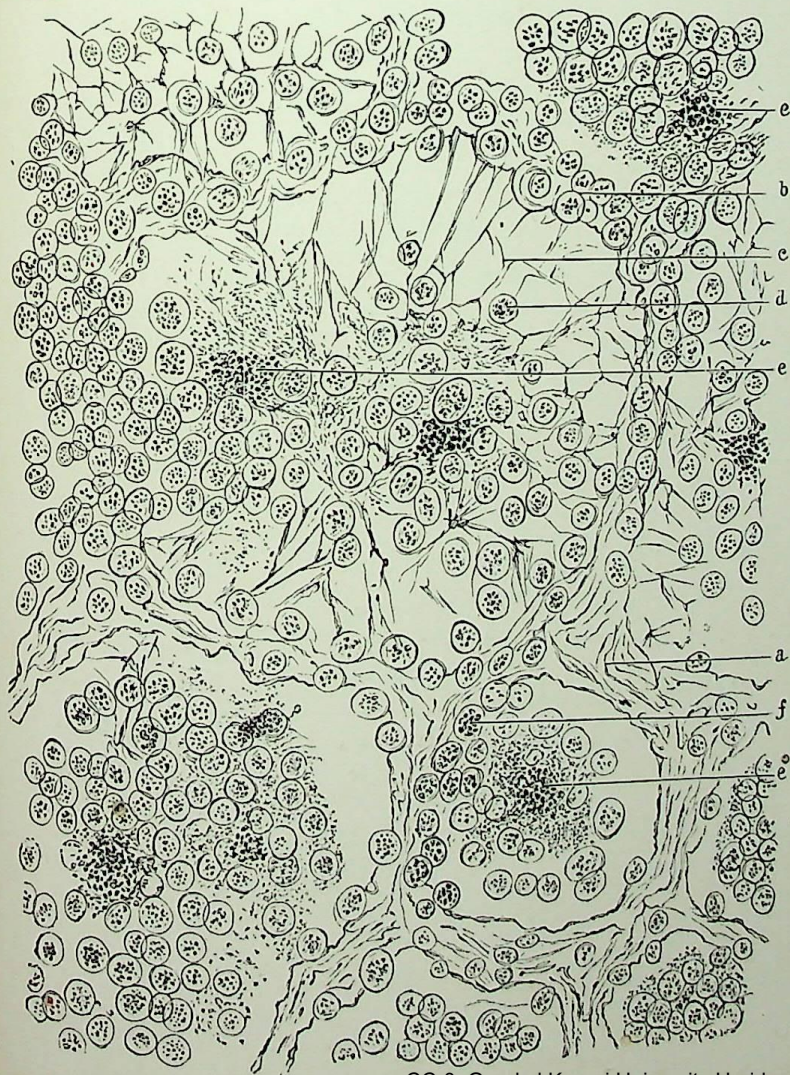
Fig. 11.—Pyæmic Abscess of Lung. *a*, Walls of alveoli; *b*, effused small cells; *c*, fibrin lying in alveolar cavities; *d*, cell entangled in meshes of same; *e*, *e*, *e*, masses of micrococcus (staphylococcus) lying in the exudation; *f*, effused cell becoming fatty. (× 350 diams.)
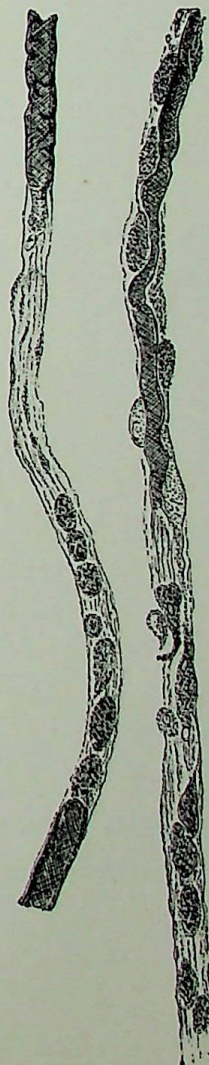
Fig. 13.—Fatty Degeneration of Nerve-fibres of Phrenic Nerve in Diphtheria (Meyer).

Diseases of the Spleen, the Kidneys, the Lungs, and the Nerves are all treated in detail in the Encyclopædia Britannica.

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"The Newcomes" and the Index

FEW people would imagine that the Tenth Edition of the *Encyclopædia Britannica* would be directly useful as an aid to understanding an obscure phrase in a novel by Thackeray. Yet such is the case. In Chapter VIII. of *The Newcomes* we have the following account of Clive's cousin:—

> Barnes Newcome never missed going to church, or dressing for dinner. He never kept a tradesman waiting for his money. He seldom drank too much, and never was late for business, or huddled over his toilet, however brief had been his sleep, or severe his headache. In a word, he was as scrupulously whited as any sepulchre in the whole **bills of mortality**.

The biblical origin of the phrase "whited sepulchre," to denote a hypocrite, is familiar to most people. But how does Thackeray come to use it in connexion with "bills of mortality." What are "bills of mortality"? The adjoining fragment from the Index to the Tenth Edition directs our attention, under the entry "Mortality, Bills of," to Vols. 19 and 22. How adequately the *Encyclopædia Britannica* clears away the obscurity of the phrase in the novel may be perceived on reading the following passages to which the Index refers us:—

> In the first half of the 17th century plague was still prevalent in Europe, though considerably less so than in the Middle Ages. In the second half a still greater decline is observable, and by the third quarter the disease has disappeared or was disappearing from a great part of Western Europe. The epidemics in England will be most conveniently considered in one series. From this time onwards we have the guidance of the "**Bills of Mortality**" issued in London, which, though drawn up on the evidence of ignorant persons, are doubtless roughly true (Vol. 19, page 165).

This passage explains to us the origin of the phrase "bills of mortality," but obviously Thackeray cannot have used it in its original sense. Let us see if the other reference will help us to a more perfect elucidation.

> Political arithmetic had come into existence in England in the middle of the 17th century, or about the time when Conring was instructing the students of Helmstadt. The earliest example of this class of investigation is the work of Captain John Graunt of London, entitled *Natural and Political Annotations made upon the Bills of Mortality*, which was first published in 1666. This remarkable work, which dealt with mortality in London only, ran through many editions, and the line of inquiry it suggested was followed up by other writers, of whom the most distinguished was Sir William Petty, whose active mind was naturally attracted by the prospect of making use of a new scientific method in the class of speculations which occupied him. *Sir William was the first writer to make use of the phrase which for nearly a century afterwards was employed to describe the use of figures in the investigation of the phenomena of human society* (Vol. 22, page 462).

From this passage we at once see how the meaning of the phrase "Bills of Mortality" was extended by Sir William Petty into a wider significance that prevailed for nearly a century. And the transition in the history of the phrase to a still further extension of meaning by Thackeray, after about another half-century, is an interesting philological episode into the secret of which the new Index has enabled us to penetrate. In the eyes of Thackeray, Barnes Newcome was "as scrupulously whited as any sepulchre in the whole bills of mortality"—that is to say, if we denude the words of the delicate shades of sense conveyed by their literary form, "Barnes was as profound a humbug as any to be found in the whole political catalogue of humanity."

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A FEW of the MEDICAL AND SURGICAL ARTICLES in the

Adulteration, Ambulance, Anæsthesia, Anatomy, Aphasia, Apoplexy, Appendicitis, Beri-Beri, Blind, Bronchitis, Cancer, Celsus, Cholera, Cramp, Deaf and Dumb, Dentistry, Dietetics, Digestive Organs, Diphtheria, Drowning, Drunkenness, Ear, Embryology, Epilepsy, Ergot, Eye, Fever, Gentian, Glycerine, Goitre, Gout, Harvey, Heart Diseases, Hernia, Hippocrates, Homœopathy, Hospitals, Hydrocephalus, Hydropathic, Hydrophobia, Hygiene, Hysteria, Influenza, Insanity, Ipecacuanha, Jaundice, Jenner, Leprosy, Locomotor Ataxy, Longevity, Magnetism (Animal), Malaria, Measles, Medicine, Medical Education, Mineral Water, Monster, Narcotics, Neuralgia, Nutrition, Obstetrics, Ophthalmology, Paracelsus, Paralysis, Parasitism, Pathology, Pellagra, Pharmacology, Pharmacopœia, Phthisis, Physiology, Plague, Pleurisy, Pneumonia, Poisons, Public Health, Quarantine, Quinine, Rabies, Respiration, Rheumatism, Rickets, St. Vitus Dance, Scarlet Fever, Scrivener's Palsy, Scrofula, Skin Disease, Slaughter-houses, Sleep, Small-pox, Stammering, Stomach (Diseases of), Syphilis, Sunstroke, Surgery, Sweating Sickness, Sydenham, Taste, Therapeutic Uses, Therapeutics, Throat Diseases, Touch, Tuberculosis, Typhoid, Typhus, Vaccination, Ventilation, Voice, Yellow Fever.

The Tenth Edition

ENCYCLOPÆDIA BRITANNICA

in the SURGERY AND MEDICINE on WRITERS of the FEW A

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ANIMAL & VEGETABLE KINGDOMS

Thus, then, to man the voice of nature spake;
"Go, from the creatures thy instructions take,
Learn from the birds what food the thickets yield;
Learn from the beasts the physic of the field;
Thy arts of building from the bee receive;
Learn of the mole to plough, the worm to weave;
Learn of the little nautilus to sail,
Spread the thin oar and catch the driving gale."—POPE.

THE growth of towns and the corresponding decline of country life as the ideal condition of existence in men's minds has brought with it many well-known and much discussed evils. But we nearly always forget to mention the cardinal evils.

Plant life and animal life, which in the country form the natural study and recreation of young and old alike, are entirely obscured from the horizon of the man whose daily occupation confines him to a city office, or to the Law Courts, or to the sick room, or to the province of local government. Well may a train of imaginative reflection be fired in a man by the thought that cities may fall in ruins, the Stock Exchanges of the world collapse, whole peoples become annihilated by a cataclysm of nature, but the silent toad will yet blink on the borders of the morass secure in the accumulated wisdom of its years; the pelican will still pursue his unconcerned way across the desert; the blue-throat will wing its yearly flight across Europe from Nile Valley to the Baltic. There still lives a tortoise on whom Luther may have looked. That elephants are often centenarians is a fact too familiar to excite our wonder. The brief flash of life in Infusoria helps us to realize how infinitely various are the phenomena which prodigal Nature offers to the study of mankind.

No child could look through the illustrations of the numerous articles devoted to birds, beasts, fishes, and reptiles in the Tenth Edition without a sense of delight and curiosity. Nor could the least botanical of observers fail to be interested in the discovery that there are "monstrosities" in plants; that in the United States above £60,000,000 were lost in one year through epidemic plant diseases; that the agents of these diseases are to be sought in Fungi, Atmosphere, Soil, and Insects. All of this may be studied at leisure in the article PATHOLOGY OF PLANTS.

And here it is worth pointing out that the titles of articles, often repellent to the layman owing to the necessities of technical nomenclature, are in many instances by no means characteristic of the material to which they form a mere label for the purposes of identification. The following extracts can only push open to a very small extent the door that is between the reader and the long gallery of biological information within the Tenth Edition. Life in every physical aspect, from the lowest manifestation of the amœba to the highest presentation in civilized man, can be studied with the aid of the best authorities. And the Index, with its half million entries, may truly be said to have surmounted the only difficulty which militated against the use of the work in moments of leisure for the satisfaction of a doubt, or the pleasure of seeking definite information with the greatest economy of time.

THE HERMIT CRAB.

From the Article (33 pages) by HENRY WOODWARD, F.R.S.

Crustacea.— . . . . . Certain of the Anomoura, or hermit-crabs, however, find no difficulty in adapting themselves to terrestrial conditions. The writer has kept the *Cenobita Diogenes* from the Antilles, tenanting an *Achatina* shell, alive in a Wardian case for three months,
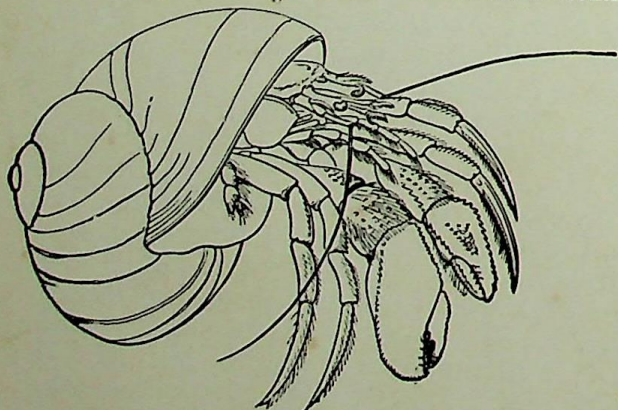
FIG. 20.—Hermit-Crab (*Cenobita*) in shell. (After Morse.)

during which period he displayed great activity and most remarkable powers as a climber. These West Indian crabs are not infrequently brought over alive to England with cargoes of guano and other natural products (fig. 20).

[*ACTINOZOA, HYDROZOA, MOLLUSCA, are but three of the long Articles in the Tenth Edition devoted to Sea Life.*]

A WALKING FISH.

From the Article (65 pages) by ALBERT GÜNTHER, M.D., F.R.S.

Ichthyology.— . . . . . . In certain fishes the shape and function of the fins are considerably modified: thus, in the rays, locomotion is almost entirely effected and regulated by the broad and expanded pectoral fins acting with an undulatory motion of their margins, similar to the
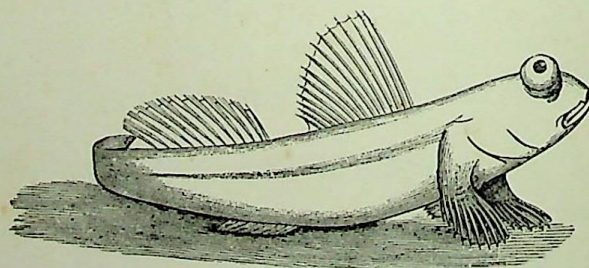
FIG. 12.—*Periophthalmus koelreuteri.*

undulations of the long vertical fins of the flat-fishes; in many blennies the ventral fins are adapted for walking on the sea-bottom; in some Gobioids (*Periophthalmus*), Trigloids, Scorpænioids, and *Pediculati* the pectoral fins are perfect organs of walking. . . . .

[*The same author contributes an Article on FLYING FISHES.*]

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THE FRILLED LIZARD.

From the Article (6 pages) *by* ALBERT GÜNTHER, *M.D., F.R.S.*

Lizard.— . . . . . . One (fig. 5) is the Frilled Lizard (*Chlamydosaurus*), which is restricted to Queensland and the north coast, and grows to a length of 2 feet,
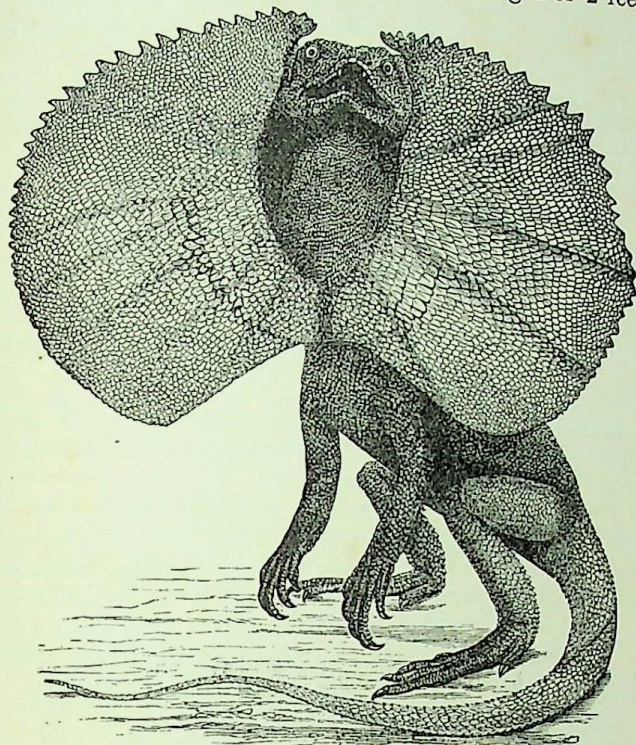
Fig. 5.—Frilled Lizard (*Chlamydosaurus*).

including the long tapering tail. It is provided with a frill-like fold of the skin round the neck, which, when erected, resembles a broad collar, not unlike the gigantic lace-collars of Queen Elizabeth's time. . . . .

[*To* CROCODILE, TORTOISE, CHAMELEON, ASP, VIPER, COBRA, RATTLESNAKE, ALLIGATOR, *special illustrated Articles are devoted.*]

MAN'S ANCESTOR.

From the Article (20 pages) *by* ST. GEORGE MIVART, *F.R.S.*

Ape.— . . . . The orang (*S. satyrus*) constitutes the genus *Simia*, which gives its name to the whole family

Fig. 1.—The Orang-outan (*Simia satyrus*). From Mr Wolf's sketch at Zoological Gardens.

(*Simiadæ*), as well as to the sub-family (*Simiinæ*) to which it belongs. Of this genus there is but one certain species, which is, however, subject to considerable variation. . .

[*Professor* HUXLEY *writes the Article* ANIMAL KINGDOM *in the Tenth Edition.*]

A MESOZOIC MONSTER.

From the Article (41 pages) *by* ALBERT GÜNTHER, *M.D., Ph.D., F.R.S., and* ST. GEORGE MIVART, *M.D., Ph.D., F.R.S.*

Reptiles.— . . . . . . Marsh compares the Dinosaurs, as regards diversity of form, with the Marsupials, and thinks that, like these latter, they should take the rank of a sub-class rather than order. . . . .

Fam. c. *Iguanodontidæ.* A single row of teeth. Three functional digits in pes. Two symmetrical sternal ossifications. Two genera from Europe: *Iguanodon* and *Vectisaurus*; and three comparatively small forms from the Dinosaurian deposits in North America: *Camptonotus, Laosaurus, Nanosaurus.* Of these *Iguanodon* is the one which was first discovered (1825), and of which skeletons have been obtained as complete as we can ever hope to see of these creatures. The remains occur in formations from the Kimmeridge Clay to the Upper Greensand, and have been referred to three species, varying in size from 10 to 35 feet in length. They most probably were aquatic in their habits, using their powerful tail as a propelling organ, like the Crocodiles; but they differed from them in their mode of locomotion on shore, walking on their hind legs like a Struthious Bird. (See fig. 1.) . . . .
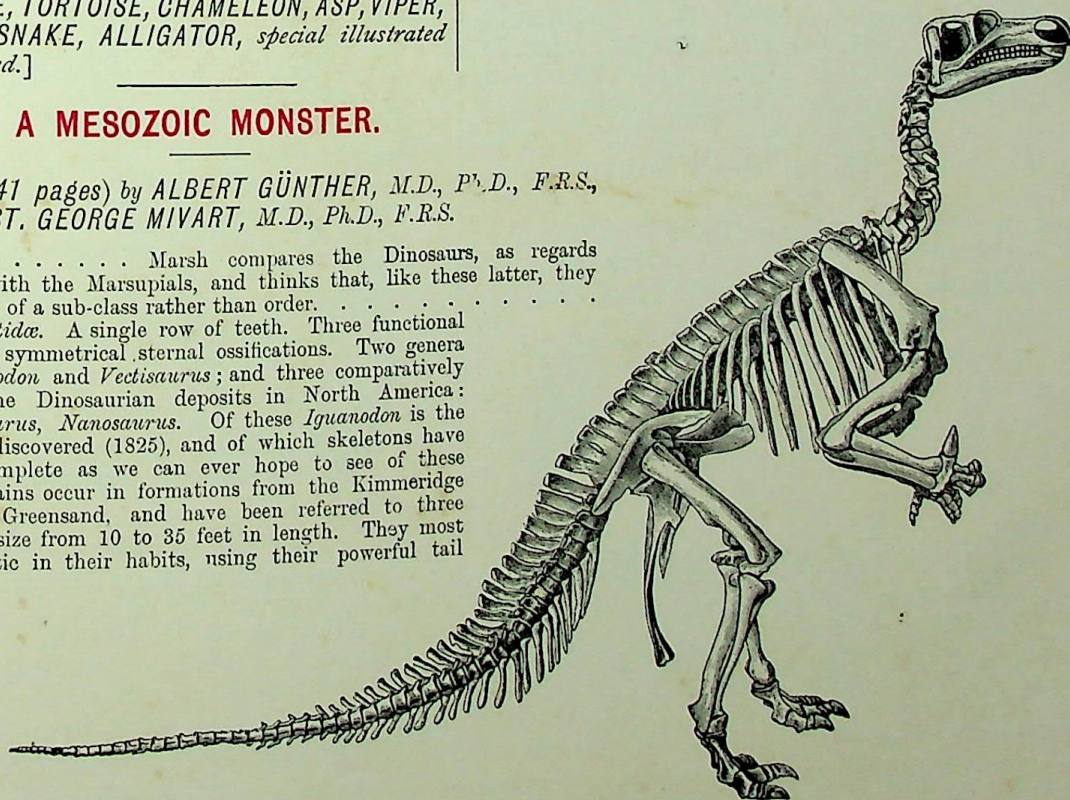
Fig. 1.—Skeleton of *Iguanodon bernissartensis* (after Dollo).

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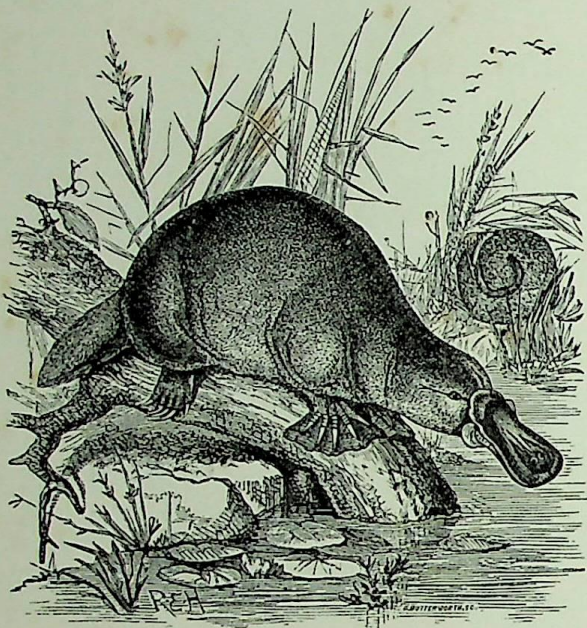
A PUZZLE TO NATURALISTS.

From the Article (1¼ *pages*) *by the late* Sir W. H. FLOWER, *LL.D.*

Platypus.— . . . . . . The platypus is pretty generally distributed in situations suitable to its aquatic habits throughout the island of Tasmania and the southern and eastern portions of Australia. Slight variations in the colouring and size of different individuals have given rise

Platypus. From Gould's *Mammals of Australia.*

to the idea that more than one species may exist; but all naturalists who have had the opportunity of investigating this question by the aid of a good series of specimens have come to the conclusion that there is but one; and no traces of any extinct allied forms have yet been discovered. . . . .

[*The great zoologists,* HARVEY, GESNER, LINNÆUS, DE BUFFON, GILBERT WHITE, CUVIER, HAECKEL, AGASSIZ, VAUGHAN THOMPSON, AUDUBON, *are the subjects of special biographies in the Tenth Edition.*]

A SYMBOLIC ANIMAL.

From the Article (54 *pages*) *by* Rev. O. PICKARD, M.A., *Cambridge, Author of "New and Rare Spiders."*

Arachnida.— . . . . . . The Scorpion is one of the great

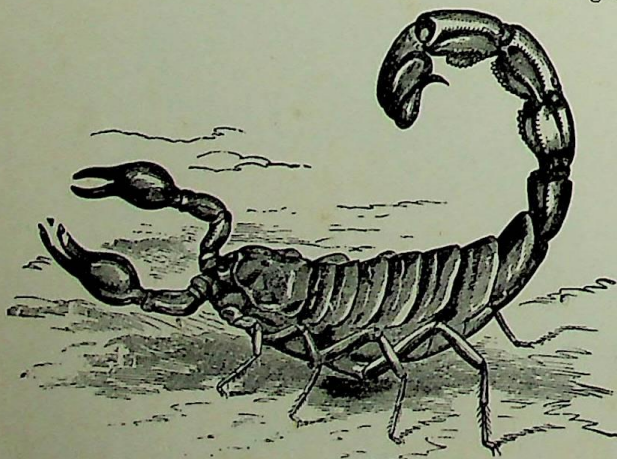



Fig. 51.—Drawing from life of the desert Scorpion, *Buthus australis*, Lin., from Biskra, N. Africa. (From Lankester, *Journ. Linn. Soc. Zool.* vol. xvi., 1881.)

animals of ancient lore and tradition. It and the crab are the only two invertebrates which had impressed the minds of early men sufficiently to be raised to the dignity of astronomical representation. It is all the more remarkable that the scorpion proves to be the oldest animal form of high elaboration which has persisted to the present day. . . . .

Fossil scorpions of the modern type are found in the Coal Measures. At the present day scorpions of various genera are found in all the warm regions of the world. In Europe they occur as far north as Bavaria and the south of France. The largest species measure 9 inches from the front of the head to the end of the sting, and occur in tropical India and Africa. Between 200 and 300 species are known. . . . .

[*Such curious insects as the* PRAYING MANTIS, *the* ICHNEUMON-FLY, *and the* BEETLE *which was worshipped in ancient Egypt, are all dealt with in special Articles.*]

THE ARCHÆOPTERYX.

From the Article (80 *pages*) *by* Professors W. K. PARKER *and* ALFRED NEWTON.

Birds.— . . . . . . An enormous space of time separates these reputed Ornithichnites, as they are called, from the first undoubted fossil bird. This was discovered in 1861 by Andreas Wagner in the lithographic slate of Solenhofen in Bavaria, belonging to the Oolitic series, and is commonly known by the name of Archæopteryx, though that of Gryphosaurius was given by its original de-

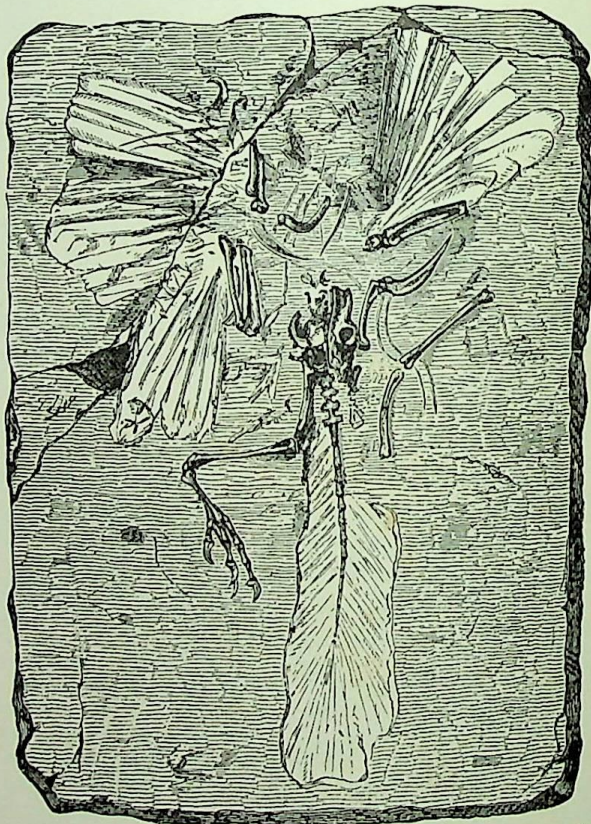



Fig. 38—Slab containing remains of *Archæopteryx*, from the original in the British Museum. Reduced.

scriber to the at present unique specimen now in the British Museum. Unfortunately deficient in some very important parts—such as the head and nearly all the sternal apparatus—it has others in excellent preservation. It was about the size of a Rook (*Corvus frugilegus*), and along with the greater portion of the skeleton, impressions of many of its feathers, particularly the quills, are plainly visible. . . . .

[*Each bird or family of birds has a separate Article in the Tenth Edition,* e.g., OSTRICH, RHEA, EAGLE, RAVEN, HUMMING BIRD, ALBATROSS.]

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THE PHYLLOXERA.

From the Article (4 pages) by M. T. MASTERS, *M.D., F.L.S., F.R.S., and* ARTHUR E. SHIPLEY, *M.A., Fellow of Christ's College Cambridge.*

Vine.— . . . . The symptoms of the disease, by means of which an affected spot may be readily recognized, are these. The vines are stunted and bear few leaves, and those small ones. When the disease reaches an advanced stage, the leaves are discoloured, yellow or reddish, with their edges turned back, and withered. The grapes are arrested in their growth and their skin is wrinkled. If the roots are examined, numerous fusiform swellings are found upon the smaller rootlets. These are at first yellowish in colour and fleshy; but as they grow older they become rotten and assume a brown or black colour. If the roots on which these swellings occur be examined with a lens, a number of minute insects of a yellowish brown colour are observed; these are the root-forms (radicola) of *Phylloxera* (fig. 1); they
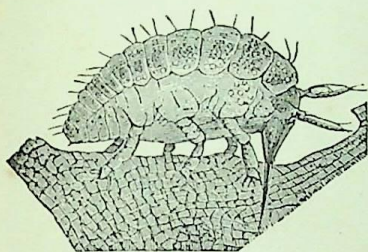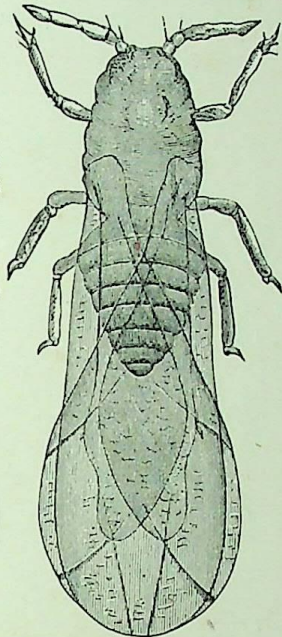
Fig. 1. Fig. 2.

Fig. 1.—Root-inhabiting form (radicola) of *Phylloxera*, with proboscis inserted into tissue of root of vine.
Fig. 2.—*Phylloxera*. Winged female which lives on leaves and buds of vine, and lays parthogenetically eggs of two kinds, one developing into a wingless female, the other into a male.

are about 8 mm. long, of an oval outline, and with a swollen body. No distinction between head, thorax, and abdomen can be observed. . . . The winged form has a slender body with distinct head (fig. 2). The eyes are well developed, with numerous facets; the antennæ have three joints, the terminal one shaped like that of the root-dwellers. . . . .

[*The Tenth Edition contains biographies of all those who have by their researches contributed to the advancement of Botanical knowledge, e.g.,* PLINY THE ELDER, ANDREAS CÆSALPINUS, JOHN RAY, DE TOURNEFORT, LINNÆUS, HOOKER, LINDLEY, *&c., &c.*]

WHY THE BUTTERFLY IS BEAUTIFUL.

From the Article (5 pages) by E. B. POULTON, *F.R.S.*

Colours of Animals.— . . . The brilliant Warning Colours of many caterpillars attracted the attention of Darwin when he was thinking over his hypothesis of sexual selection, and he wrote to Wallace on the subject (Darwin, *Life and Letters*, London, 1887, vol. iii. p. 93). Wallace, in reply, suggested their interpretation as Warning Colours, a suggestion since verified by experiment (*Proc. Ent. Soc. Lond.*, 1867, p. lxxx; *Trans. Ent. Soc. Lond.*, 1869, pp. 21 and 27). Although animals with Warning Colours are probably but little attacked by the ordinary enemies of their class, they have special enemies which keep the numbers down to the average. Thus the cuckoo appears to be an insectivorous bird which will freely devour conspicuously coloured unpalatable larvæ. The effect of the Warning Colours of caterpillars is often intensified by gregarious habits. Another Aposematic use of colours and structures is to divert attention from the vital parts, and thus give the animal attacked an extra chance of escape. The large, conspicuous, easily torn wings of butterflies and moths act in this way, as is found by the abundance of individuals which may be captured with notches bitten symmetrically out of both wings when they were in contact. The eye-spots and "tails" so common on the hinder part of the hind wing, and the conspicuous apex so frequently seen on the fore wing, probably have this meaning. Their position corresponds to the parts which are most often found to be notched. In some cases (*e.g.*, many *Lycænidæ*) the "tail" and eye-spot combine to suggest the appearance of a head with antennæ at the posterior end of the butterfly, the deception being aided by movements of the hind wings. The flat-topped "tussocks" of hair on many caterpillars look like conspicuous fleshy projections of the body, and they are held prominently when the larva is attacked. If seized, the "tussock" comes out, and the enemy is greatly inconvenienced by the fine branched hairs. The tails of lizards, which easily break off, are to be similarly explained, the attention of the pursuer being probably still further diverted by the extremely active movements of the amputated member. . . . .

[EMBRYOLOGY, HYBRIDISM, MIMICRY, VARIATION *and* SELECTION, EVOLUTION, BIOLOGY, *are only some of the Articles which treat of the Animal and Vegetable Kingdoms.*]

The Index to the Tenth Edition of the *Encyclopædia Britannica* gives to the work a new kind of vitality. As an authority on all subjects of human inquiry, the reputation of the book has long been established; as a literary companion of the highest quality, its value has come to be undisputed. What it has lacked until now has been some contrivance whereby the immense range of its varied and complex information should be made accessible at any given point of inquiry suggested by actual experience. Many people have enjoyed being led astray in their search for some particular piece of information into regions of unsuspected interest remote from the subject which first caused them to consult the volumes. But while this fascinating pursuit still lies open to the reader of the Tenth Edition, he has also acquired a new power for the immediate satisfaction of a doubt or discovery of an obscure fact in the Index of more than half a million entries, which has now been added to the work. Whatever be the item of information of which he seeks corroboration or correction, he has but to turn to Vol. 35, and there he will find a reference to the article, the page, or the elaborately finished map, in which he can dissipate his doubts. Whether it be the history and meaning of a unit of electrical measurement, the date of one of the dynasties of Ancient Egypt, the invention of gunpowder, the discovery of the compass, or the origin of some world-famous phrase, as "Ecrasez l'infâme," he will never invite the assistance of this phenomenal Index in vain.

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THE DEVIL FISH.

From the Articles (10 pages) by Prof. A. H. NICHOLSON and the Rev. T. F. BLAKE, F.R.S.

Cuttle Fish.— . . . . . . It is now known that Octopods were actually in existence in the Cretaceous
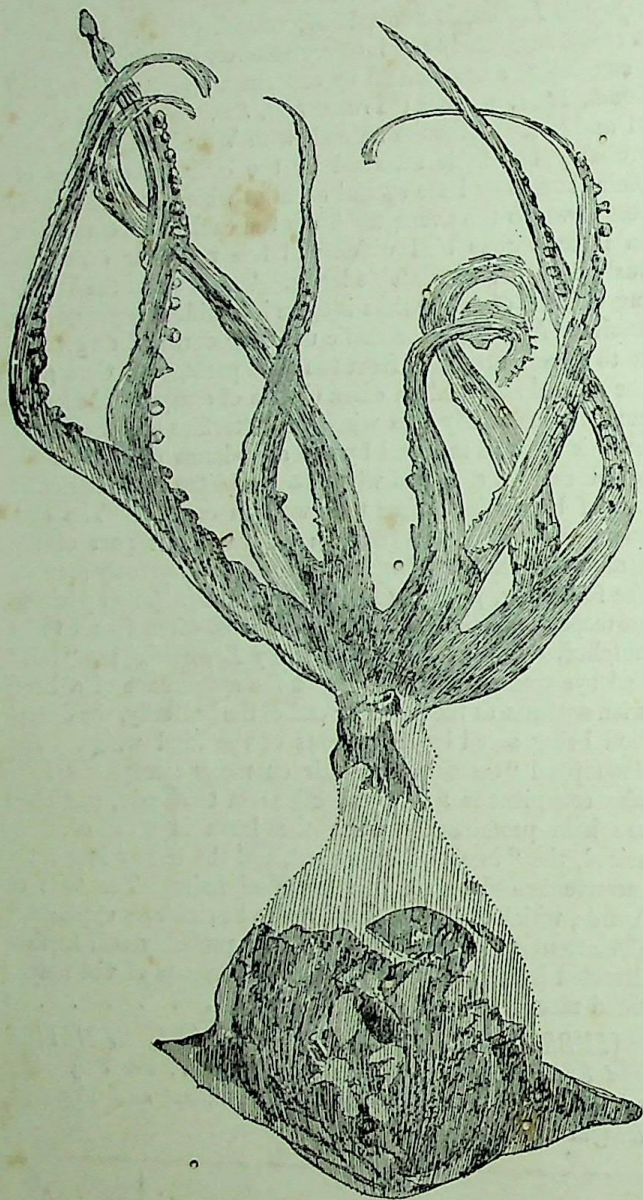
Fig. 2.—*Palæoctopus Newboldi*, the oldest Octopod known. From the Cretaceous rocks of Lebanon. (After H. Woodward.)

period, thus overlapping the Ammonoids in time, since a member of that group, the *Palæoctopus* (Fig. 2), has left an impression of its body, head, arms, and two fins, as in the *Pinnoctopus*, on rocks of that age in the Lebanon. This was naked, so that in part of the group the shell was already dispensed with. On the other hand we have in the living Argonaut an Octopod whose shell has a great external resemblance to that of an Ammonite. . . . .

[*Ocean life is noticed in a lengthy account of the distribution of Marine Animals under the heading* DISTRIBUTION. *See also* WHALE, WALRUS, DOLPHIN, *and* SEAL.]

THE GROWTH OF PLANTS.

From the Article (84 pages) by Dr. J. HUTTON BALFOUR, F.R.S.

Botany.— . . . . . . Another form of thickened underground stem is the *corm*, as seen in the Autumn Crocus (Colchicum, fig. 69), Gladiolus, &c. Structurally it is composed of a solid more or less rounded axis covered by a layer of thin membranous scales (fig. 70, *h*, *h*). A
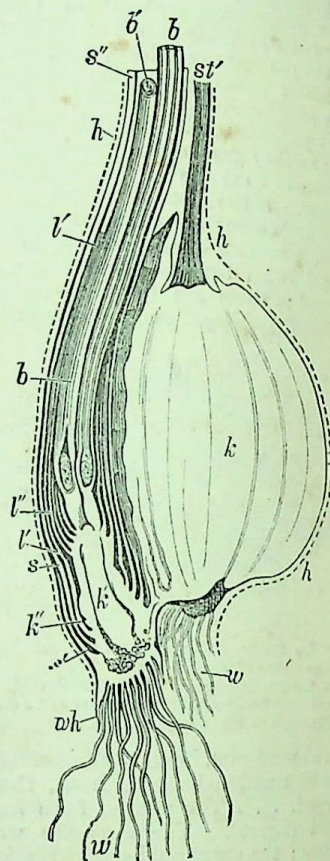
Fig. 69.—Corm of Meadow Saffron (*Colchicum autumnale*). *a*, old corm shrivelling; *b*, young corm produced laterally from the old one.
Fig. 70.—Corms of *Colchicum autumnale* in autumn when the plant is in flower. *k*, oldest corm; *h*, *h*, brown scales covering it; *w*, its roots; *st*, its withered flowering-stem; *k′*, younger corm produced from *k*; *wh*, roots from *k′*, which grows at expense of *k*; *s*, *s′*, *s″*, sheathing leaves; *l′*, *l″*, foliage leaves; *b*, *b*, flowers; *k″*, young corm produced from *k′* in autumn, and which in succeeding autumn will produce flowers. (*Sachs.*)

corm is only of one year's duration, giving off buds annually in the form of young corms. In autumn the young corm gives origin to leaves, the lower of which (*s*, *s′*, *s″*) form sheaths round the corm and flower-stalk, the upper (*l′*, *l″*) remaining very small; and in the axil of the uppermost leaves the flowering-stem develops and bears the flowers (*b*, *b′*). Meanwhile in the axil of the middle leaves on the corm, a bud—the rudiment of a new corm—appears (*k″*). . . . .

[*An Article of special interest in the Tenth Edition is* PALÆOBOTANY. ALGÆ, FUNGUS, LICHENS, MUSCINÆ, *and* VEGETABLE KINGDOM *are names of some of the other Botanical Articles.*]

Many times the space which it has been possible to devote to this section would be required to give even an idea of how complete a zoological picture book the *Encyclopædia Britannica* is. But the scientific side of Zoology, ANATOMY, EMBRYOLOGY, HEREDITY, MIMICRY, and the wonderland of EVOLUTION opened up by Darwin, is given in just as much detail in the Tenth Edition.

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Plate from the Article **Mammalia.**

THE OKAPI (Immature).

The new animal discovered by Sir H. H. Johnston in the Semliki Forest, between Lakes Albert and Albert Edward.

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THE Three-Colour Process, by which the Plate on the previous page was printed, is fully explained in the six-page Article, PROCESS, by Edwin Bale, R.I., in the Tenth Edition of the Encyclopædia Britannica.

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THE CIRCLE OF LIFE

THE MONSTERS OF THE PAST, THE MASTODON, THE MAMMOTH, THE PTERODACTYLE, THE PLESIOSAURUS, THE ICHTHYOSAURUS, AND GIANT SLOTH, ARE ALL DESCRIBED IN THE TENTH EDITION.

PLANT LIFE, TREES, FERNS, LICHENS, ALGÆ, FUNGI, HEPATICÆ, MUSCINÆ, THE PHYSIOLOGY OF PLANTS, CARNIVOROUS AND INSECTIVOROUS PLANTS. THE WHOLE WORLD OF THE BOTANIST IS HERE.

You have been interested and amused at the illustrations on the preceding pages, but these are only some of the pictures which add to the value of the account of each beast, bird, fish, or reptile in the *Encyclopædia Britannica*. For this wonderful book contains them all. Take the Beasts or Mammals first. Of course there are articles on the LION, TIGER, ELEPHANT, APE, RHINOCEROS, HIPPOPOTAMUS, BEAR, and all the large beasts of the forest and jungle. But the other creatures are just as fully noticed. There are, for instance, the BEAVER, CHAMOIS, ICHNEUMON, HYÆNA, CAMEL, KANGAROO, ANT-EATER, ARMADILLO, AARD-VARK, MANATEE, ZEBRA, PUMA, JAGUAR, LEMUR, WOLF, MARMOT, MOLE, PANGOLIN, PHALANGER, PLATYPUS. And as there are few branches of Zoology in which greater advances have been made than in the Mammalia since the Ninth Edition, so has it been the aim of the Editors of the Tenth Edition to bring the information fully up to date in the article MAMMALIA.

The Article MAMMALIA is by the late Sir W. H. FLOWER, LL.D., F.R.S.

APE is by Prof. Sir St. G. MIVART, F.R.S.

SNAKES and REPTILES are by ALBERT GUNTHER, M.D., Ph.D., F.R.S.

BIRDS by Prof. W. K. PARKER.

ANIMAL KINGDOM by HUXLEY.

MIMICRY by GRANT ALLEN.

MOLLUSCA by Prof. E. RAY LANKESTER, F.R.S.

CRUSTACEA by Prof. HENRY WOODWARD, F.R.S.

INSECTS by ROBERT M'LACHLAN, F.R.S.

Then the birds! No book or books could enter for a moment into rivalry with the Tenth Edition of the *Encyclopædia Britannica* as to the completeness of the review of Feathered Creation offered in its pages. What can you not find in the 35 Volumes? What bird is not the subject of a sketch in the Tenth Edition, from the Dodo, that wonderful creature which has but lately become extinct, to the Humming Bird, gay in crimsons, purples, and golds; from the Bird of Paradise to the shabby little House Sparrow, from the Ostrich to the Nightingale? First there are the articles BIRDS and ORNITHOLOGY, dealing at great length with all feathered creatures, and then the *Encyclopædia*, having reviewed the whole subject, gives in detail an account of each. Here are some: ALBATROSS, EAGLE, RHEA, EMEU, RAVEN, PITTA, CRANE, COOT, CORMORANT, CURASSOW, CASSOWARY, DOVE, STORK; and these are merely a chance selection from the hundreds of interesting notices with which each volume of the Tenth Edition will delight bird-lovers.

Let our next division be the Water-World. Here what a range we have! River Life and Ocean Life; Fishes, Crustacea, Sea Plants, and Sea Monsters. The *Encyclopædia Britannica* puts before its possessor such a wealth of research, such mines of information, that it is hardly possible even to catalogue the chief articles devoted to the subject. There are those on ICHTHYOLOGY, PISCICULTURE, ANGLING, CRUSTACEA, SEA FISHERIES, MOLLUSCA, AMPHIBIA, to mention only a few of those dealing with the Water-World generally. Then each Family of Fishes has a separate article. SEA-ANEMONES, SEA-SNAKES, SEA-SLUGS, SEA-URCHINS, and all Marine Curiosities, such as the SEA-BEAR, SEA-CAT, SEA-CUCUMBER, SEA-DEVIL, SEA-HEDGEHOG, SEA-HORSE, are all noticed; and when you realize that the Tenth Edition gives information too as to Fishes of prehistoric times; as to CORAL, SPONGE, SEAL, and all other Sea Industries, you can begin to see how comprehensive is the survey of the Water-World.

Let our last division be the Reptile and Insect Worlds. All that has been said about the completeness of the Tenth Edition in the other three divisions of our Circle of Life must be repeated here, for no space could be found for even a bare enumeration of the articles on the Reptiles and Insects which the *Encyclopædia Britannica* contains. All the Snakes, COBRA, ASP, RATTLESNAKE, ANACONDA, VIPER, BOA CONSTRICTOR, are described, and the LIZARD family has a long article to itself, besides the separate articles devoted to each member of the family. CROCODILE, ALLIGATOR, TORTOISE, CHAMELEON, IGUANODON, TOAD, are all here. Descriptions of ANTS and their habits, of BEES, of the great SPIDER family, of BEETLES, of MOSQUITOES, of BUTTERFLIES, occupy some of the space devoted to Entomology in the Tenth Edition; while the historic Scorpion, Twig-Insects, and the Praying MANTIS, to mention only some of the freaks of the Insect World, can all be read about in its pages.

ANIMALS OF FABLE, THE DRAGON, GRIFFIN, SPHINX, CENTAUR, SATYR, ROC, CHIMÆRA, COCKATRICE, ARE ALL DESCRIBED, AND THEIR LEGENDS GIVEN IN THE ENCYCLOPÆDIA BRITANNICA.

DO YOU WANT TO KNOW ABOUT DOMESTIC ANIMALS? THE TENTH EDITION TELLS YOU ALL ABOUT THEM, HORSE, DOG, CAT, PIGEON, SHEEP, PIG, GOAT, OX, AND EVERY OTHER CREATURE THAT MAN HAS DOMESTICATED.

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SCIENCE

Man's whole life and environment have been laid open and elucidated; scarcely a fragment or fibre of his Soul, Body, and Possessions, but has been probed, dissected, distilled, desiccated, and scientifically decomposed.—CARLYLE.

THE Tenth Edition, marking, as it does, the close of the Victorian Era, tells in the vast quantity of articles devoted to Science the story of an advance in human knowledge which is nothing short of miraculous. When the Encyclopædia Britannica was produced for the first time about the middle of the Eighteenth Century, almost every branch of science was in a state of stagnation, with little prospect that in a few short years Man's whole theory of the Universe would be revolutionized. No one could have anticipated, and as a matter of fact nobody did anticipate, the whole magic story of evolution, of steam, of telegraphy, of the spectroscope, and of those ancient civilizations the discovery of which once and for all broke down the chronology of the Book of Genesis.

Within the limits, it may almost be said, of the Victorian Era lies the whole romance of science, and this story it is which the Tenth Edition of the Encyclopædia Britannica tells in article after article of entrancing interest. But it does more than this. It presents to its readers in many cases the accounts of the prodigious advances of science from the pens of those very men whose labours and researches have endowed the human race with unexpected knowledge, and enriched daily life with unexampled facilities of communication, with immunity from disease, and with the beneficent rescue from the pains and penalties of human existence by means of anæsthetics. If the nineteenth century had no other claim to fame this latter gift of Science would alone demand its award. In the subjoined extracts it has been impossible to do more than give the reader a slight idea of the immense range of subjects, the depth of research and the weight of authority which characterize the articles upon Science in the Tenth Edition. It has even proved impossible to find space for extracts representative of every subject, and the articles relating to mathematics, astronomy, geology, and the scientific enquiry into Man's origin would all need a section of this pamphlet to themselves to convey any idea of their number and length.

THE NATURE OF RÖNTGEN RAYS.

From the Article (70 pages) by J. A. FLEMING, D.Sc., F.R.S., and J. J. THOMSON, D.Sc., F.R.S., and others.

Electricity.— . . . . . . Whether Röntgen rays are a form of light, that is, are some form of electro-magnetic disturbance propagated through the ether, is a question on which at present the evidence is not quite decisive. They resemble light in their rectilinear propagation. They affect a photographic plate, and as Brandes and Dorn have shown, they produce an effect, though a small one, on the retina, giving rise to a very faint illumination of the whole field of view. They resemble light in not being deflected by either electric or magnetic forces, while the secondary rays, of small penetrating power, produced by the incidence of the more penetrating primary rays, may be compared with the fluorescent visible light given out by certain substances when illuminated with ultra-violet light. The absence of refraction is not an argument against the rays being a kind of light, for all theories of refraction make this property depend upon the relation between the period of vibration, T, of the refracting substance, and the period t of the light vibrations, the refraction vanishing when T/t is very small. Thus there would be no refraction for light of very small period, and this would also be true if instead of regular periodic undulations we have a pulse of electro-magnetic disturbance, provided the time taken by light to travel over the thickness of the pulse be small compared with the periods of vibration of the molecules of the refracting substance. The absence of polarization in Röntgen rays after passing through tourmaline is again not decisive; the structure of tourmaline may be too coarse to produce polarization by absorption in waves of such small wave-length, or of such thin pulses as we must, if we accept this view, regard as forming Röntgen rays. The difficulties of experiments on the diffraction of these rays are very great, apart from those which would be caused by the smallness of the wave-length or the thinness of the pulse. The secondary radiation produced when the rays strike against the photographic plate or pass through air might give rise to what might easily be mistaken for diffraction effects. Röntgen has never succeeded in observing effects which prove the existence of diffraction. Fomm observed, in the photograph of a narrow slit, light and dark bands which look like diffraction bands, but observations with slits of different sizes showed that they were not of this nature, and Haga and Wind have explained them as contrast effects. The last two observers, however, noticed with a very narrow wedge-shaped slit a broadening of the image of the narrow part which they are satisfied could not be explained by the causes previously mentioned, and which they regard as conclusive proof of diffraction. . . .

[*Articles dealing with Electricity and allied subjects will be found under separate headings*—ACCUMULATORS, DYNAMO, ELECTRICITY SUPPLY, TELEGRAPH, TELEPHONE, THERMO-ELECTRICITY, TRANSFORMERS, WELDING (ELECTRIC), *&c.*]

THE ORIGIN OF THE SOLAR SYSTEM.

From the Article by Sir ROBERT S. BALL, LL.D., F.R.S., Astronomer-Royal of Ireland.

Nebular Theory.— . . . . . . There are very remarkable features in the solar system which point unmistakably to some common origin of many of the different bodies which it contains. We must at once put the comets out of view. It does not appear that they bear any testimony on either side of the question. We do not know whether the comets are really indigenous to the solar system or whether they may not be merely imported into the system from the depths of space. Even if the comets be indigenous to the system, they may, as many suppose, be merely ejections from the sun, or in any case their orbits are exposed to such tremendous perturbations from the planets that it is quite unsafe from the present orbit of a comet to attempt any estimate of what that orbit may have been countless ages ago. On all these grounds we must put the comets on one side for the present, and discuss the nebular theory without any reference thereto. But even with this omission we still muster in the solar system from two to three hundred

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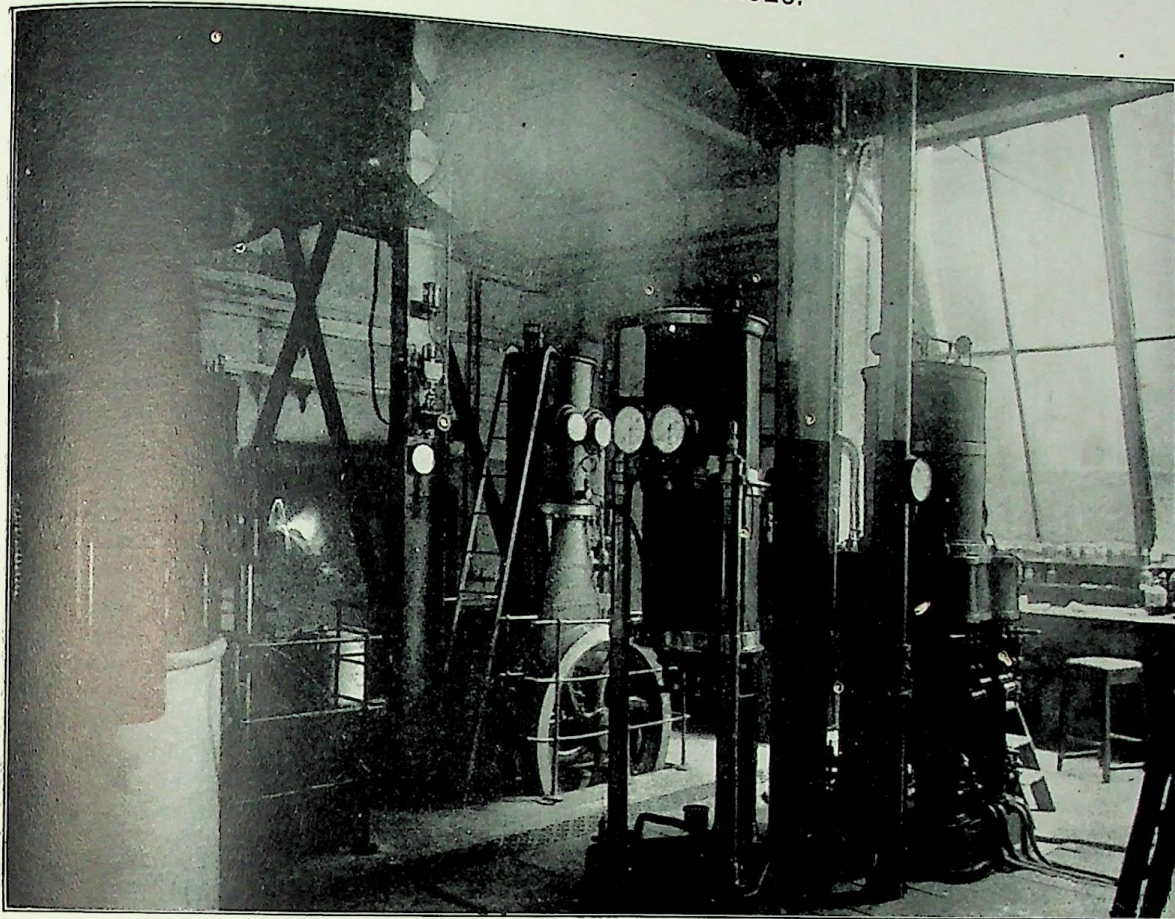
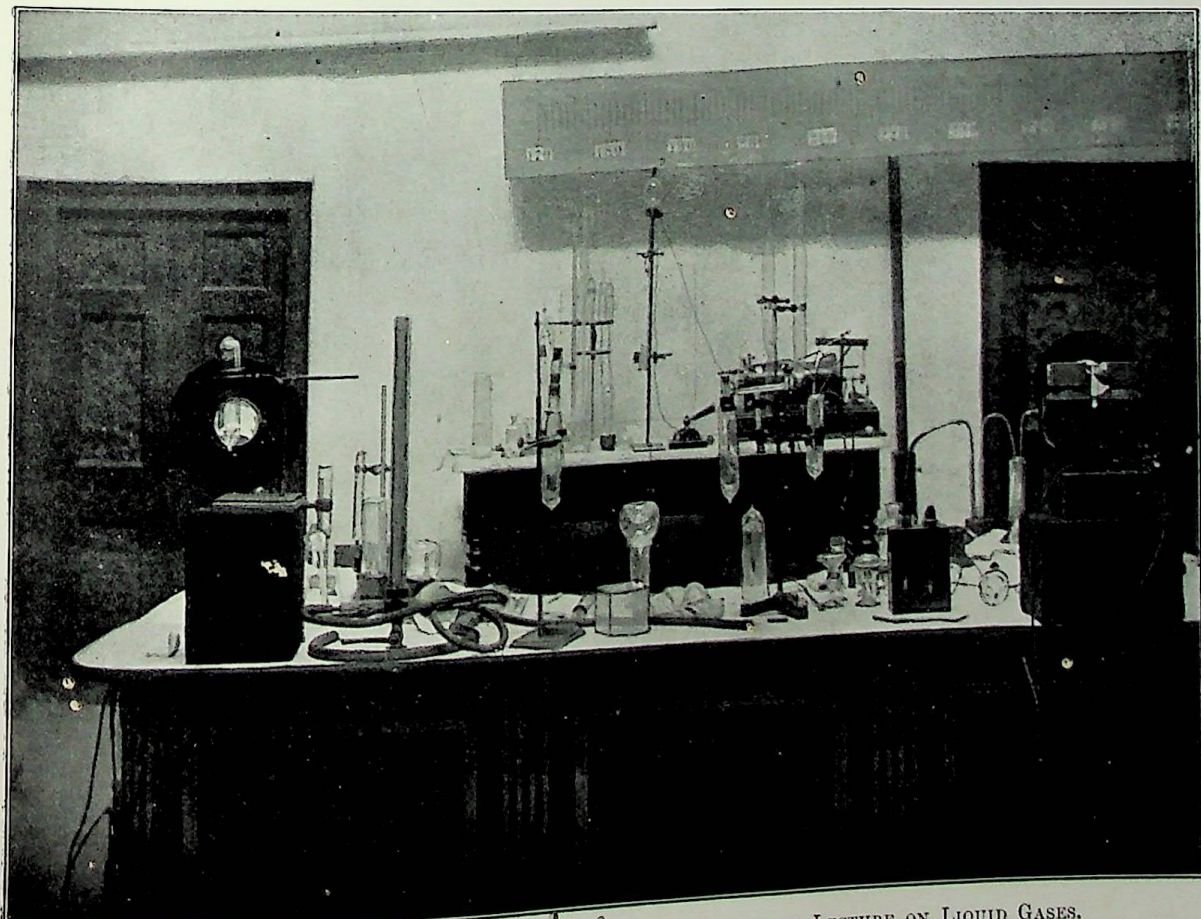
Professor DEWAR himself writes the Article LIQUID GASES in the Tenth Edition.

SCIENCE—LIQUID GASES.

PLANT FOR LIQUEFACTION OF GASES IN LABORATORIES OF ROYAL INSTITUTION, LONDON.

LECTURE TABLE AT ROYAL INSTITUTION, LONDON, ARRANGED FOR LECTURE ON LIQUID GASES.

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See the extract on p. 212 from Lord KELVIN'S Article ELASTICITY.

METALLOGRAPHY.

Fig. 1.—Gold containing 5 per cent. of copper, etched by nitro-hydrochloric acid. Shows crystalline grains. Mag. 25 diams.
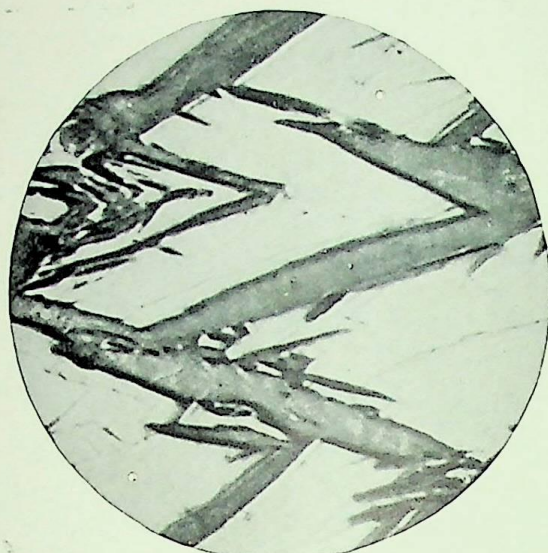
Fig. 2.—Steel containing 1·2 per cent. of carbon quenched in iced brine from a temperature of 1000° C. Mag. 1000 diams.
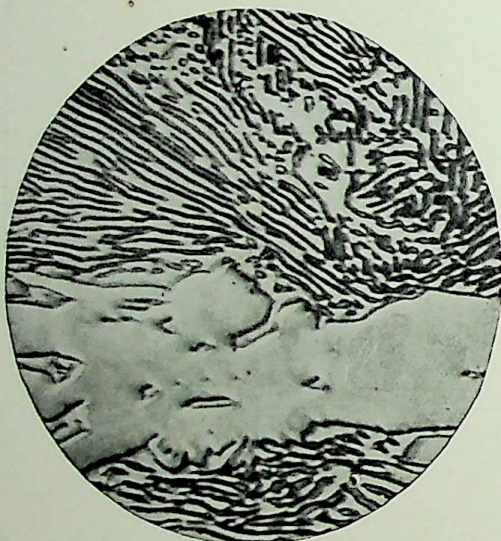
Fig. 3.—Steel containing 1·2 per cent. of carbon slowly cooled from 900° C. Shows pearlite and cementite. Mag. 1000 diams.
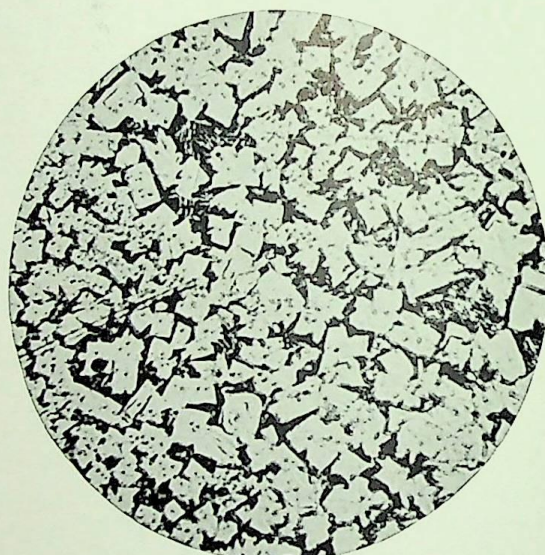
Fig. 4.—Lead-antimony alloy cast on mica and etched. 75 per cent. Pb, 25 per cent. Sb. Mag. 140 diams.
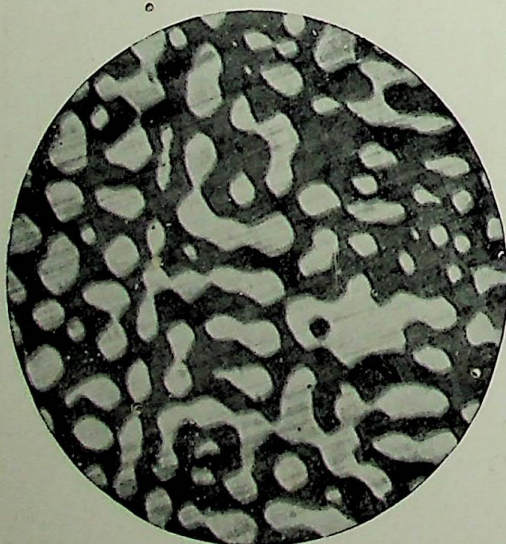
Fig. 5.—Gold-lead alloy lightly etched with 1 per cent. nitric acid. 50 per cent. Pb, 50 per cent. Au. Mag. 140 diams.
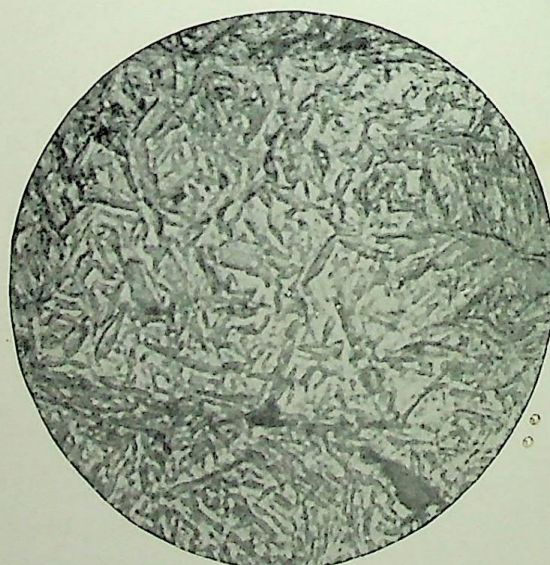
Fig. 6.—Steel containing 0·8 per cent. carbon quenched in water from a temperature of 1000° C. Shows the martensitic structure. Mag. 1000 diams.

Separate Articles are devoted in the Tenth Edition of the *Encyclopædia Britannica* to

GOLD, IRON AND STEEL, LEAD, ALLOY, METALLURGY, &c.

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bodies, almost every one of which pronounces distinctly, though with varying emphasis, in favour of the nebular theory. The first great fact to which we refer is the common direction in which the planets revolve around the sun. This is true not only of the great planets Mercury, Venus, the Earth, Mars, Jupiter, Saturn, Uranus, and Neptune; it is also true of the host of more than two hundred small planets. All these bodies perform their revolution in the same direction. . . . .

The nebular theory here steps in and offers an explanation of this most remarkable uniformity. Laplace supposed that our sun had once a stupendous nebulous atmosphere which extended so far out as to fill all the space at present occupied by the planets. This gigantic nebulous mass, of which the sun was only the central and somewhat more condensed portion, is supposed to have a movement of rotation on its axis. There is no difficulty in conceiving how a nebula, quite independently of any internal motion of its parts, shall also have had as a whole a movement of rotation. In fact a little consideration will show from the law of probabilities that it is infinitely probable that such an object should really have *some* movement of rotation, no matter by what causes the nebula may have originated. As this vast mass cooled it must by the laws of heat have contracted towards the centre, and as it contracted it must, according to a well-known law of dynamics, rotate more rapidly. The time would then come when the centrifugal force on the outer parts of the mass would more than counterbalance the attraction of the centre, and thus we would have the outer parts left as a ring. The inner portion will still continue to contract, the same process will be repeated, and thus a second ring will be formed. We have thus grounds for believing that the original nebula will separate into a series of rings all revolving in the same direction with a central nebulous mass in the interior. . .

[*The Tenth Edition contains Articles*—SUN, *by* Sir J. NORMAN LOCKYER, *F.R.S.;* COMETS, *by* E. S. HOLDEN, *Sc.D., LL.D., formerly Director of the Lick Observatory;* OPTICS, *by* Lord RAYLEIGH; *and* TELESCOPE, *by* DAVID GILL, *LL.D., F.R.S., Astronomer-Royal of the Cape of Good Hope.*]

THE SECRET OF CLIMATES.

From the Articles (102 *pages*) *by late Professor* BALFOUR STEWART, *LL.D., F.R.S., and Professor* CLEVELAND ABBE, *Ph.D., LL.D.*

Meteorology.— . . . . . . The temperature of the air, at the surfaces of both the earth and ocean and throughout the atmosphere, is the fundamental element of both climatology and dynamic meteorology.

Distribution of temperature.

As far as it is known from direct observation, it is best exhibited by means of isotherms or lines of equal temperature drawn on charts of the globe. It can also be expressed analytically by harmonic spherical functions, as was first done by Schoch. The normal distribution of temperature for each month of the year over the whole globe has been given by Buchan in his charts of 1868 and of 1888, also by the U.S. Weather Bureau "Bulletin A" of 1893, and again by Buchan in his new edition of Bartholomew's *Physical Atlas*, London, 1899. The temperatures, as thus charted, first receive a slight correction, called a reduction to sea-level, in order to reduce them to a homogeneous system. The actual temperature near the ground at any altitude on a continent or island may be obtained from these charts by subtracting 0·5° C. for each hundred metres of elevation of the ground above sea-level, or 1° F. for 350 feet. This reduction, however, applies specifically to temperatures observed near the surface of the ground, and cannot be used with any confidence to determine the temperature of points in the free air at any distance above the land or ocean. On all such charts the reader will notice the high temperatures near the ground in the interior of each of the continents in the summer season and the low temperatures in the winter season. In February the average temperatures in the northern hemisphere are not lowest near the North Pole, but in the interiors of Siberia and North America; in the southern hemisphere they are at the same time highest in Australia, and Africa, and South America. In August the average temperatures are unexpectedly high in the interior of Asia and North America, but low in Australia and Africa. The vertical distribution in the free air must also be studied in detail, in order to understand both the general circulation and the special systems that characterize the earth's atmosphere. Many observations on mountains and by aëronauts in balloons were made during the 19th century in order to ascertain the facts with regard to the decrease of temperature as we ascend in the atmosphere, but it is now recognized that both these classes of observations were largely affected by local influences due to the presence of the ground and the balloon. . . . .

[*See also Articles* ATMOSPHERE, CLIMATE, PHYSICAL GEOGRAPHY, ATMOSPHERIC ELECTRICITY, *&c.*]

WHY THE CHILD RESEMBLES THE PARENT.

From the Article (5 *pages*) *by* P. CHALMERS MITCHELL, *D.Sc., F.Z.S.*

Heredity.— . . . . . . The fundamental basis of heredity is the separation of a mass from the parent (germ-plasm) which under certain conditions grows into an individual resembling the parent. The goal of the study of heredity will be reached only when all the phenomena can be referred to the nature of the germ-plasm and of its relations to the conditions under which it grows, but we have seen how far our knowledge is from any attempt at such references. In the meantime, the empirical facts, the actual relations of the characters in the offspring to the characters of the parents and ancestors, are being collected and grouped. In this inquiry it at once becomes obvious that every character found in a parent may or may not be present in the offspring. When any character occurs in both, it is generally spoken of as transmissible and of having been transmitted. In this broad sense there is no character that is not transmissible. In all kinds of reproduction, the characters of the class, family, genus, species, variety or race, and of the actual individual, are transmissible, the certainty with which any character appears being almost in direct proportion to its rank in the descending scale from order to individual. The transmitted characters are anatomical, down to the most minute detail; physiological, including such phenomena as diatheses, timbre of voice, and even compound phenomena, such as gaucherie and peculiarity of hand-writing; psychological; pathological; teratological, such as syndactylism and all kinds of individual variations. Either sex may transmit characters which in themselves are necessarily latent, as, for instance, a bull may transmit a good milking strain. In forms of asexual reproduction, such as division, budding, propagation by slips, and so forth, every character of the parent may appear in the descendant, and apparently even in the descendants produced from that descendant by the ordinary sexual

Professor Huxley writes on EVOLUTION in Vol. 8.

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processes. In reproduction by spore formation, in parthenogenesis and in ordinary sexual modes, where there is an embryological history between the separated mass and the new adult, it is necessary to attempt a difficult discrimination between acquired and innate characters.

Acquired Characters.—Every character is the result of two sets of factors, those resident in the germinal material and those imposed from without. Our knowledge has taken us far beyond any such idea as the formation of a germinal material by the collection of particles from the adult organs and tissues (gemmules of Darwin). The inheritance of any character means the transmission in the germinal material of matter which, brought under the necessary external conditions, develops into the character of the parent. There is necessarily an acquired or epigenetic side to every character; but there is nothing in our knowledge of the actual processes to make necessary or even probable the supposition that the result of that factor in one generation appears in the germ-plasm of the subsequent generations, in those cases where an embryological development separates parent and offspring. The development of any normal, so-called "innate," character, such as, say, the assumption of the normal human shape and relations of the frontal bone, requires the co-operation of many factors external to the developing embryo, and the absence of abnormal distorting factors. When we say that such an innate character is transmitted, we mean only that the germ-plasm has such a constitution that, in the presence of the epigenetic factors and the absence of abnormal epigenetic factors, the bone will appear in due course and in due form. If an abnormal epigenetic factor be applied during development, whether to the embryo *in utero*, to the developing child, or in after life, abnormality of some kind will appear in the bone, and such an abnormality is a good type of what is spoken of as an "acquired" character. Naturally such a character varies with the external stimulus and the nature of the material to which the stimulus is applied, and probability and observation lead us to suppose that as the germ-plasm of the offspring is similar to that of the parent, being a mass separated from the parent, abnormal epigenetic influences would produce results on the offspring similar to those which they produced on the parent. Scrutiny of very many cases of the supposed inheritance of acquired characters shows that they may be explained in this fashion—that is to say, that they do not necessarily involve any feature different in kind from what we understand to occur in normal development. The effects of increased use or of disuse on organs or tissues, the reactions of living tissues to various external influences, to bacteria, to bacterial or other toxins, or to different conditions of respiration, nutrition, and so forth, we know empirically to be different in the case of different individuals, and we may expect that when the living matter of a parent responds in a certain way to a certain external stimulus, the living matter of the descendant will respond to similar circumstances in a similar fashion. . . . .

[*In the Encyclopædia Britannica will be found Articles on* HYBRIDISM, EMBRYOLOGY, VARIATION, TELEGONY, *&c., &c.*]

THE VICTORIOUS MARCH OF DARWINISM.

From the Article by P. CHALMERS MITCHELL, *D.Sc., F.Z.S.*

Evolution.— . . . . . . A change has taken place in the use of the word evolution. Huxley, following historical custom, devoted one section of his article to the "Evolution of the Individual." The facts and theories respecting this are now discussed under such headings as EMBRYOLOGY, HEREDITY, and VARIATION; under these headings must be sought information on the important recent modifications with regard to the theory of the relation between the development of the individual and the development of the race, the part played by the environment on the individual, and the modern developments of the old quarrel between evolution and epigenesis. The most striking general change has been against seeing in the facts of ontogeny any direct evidence as to phylogeny. The general proposition as to a parallelism between individual and ancestral development is no doubt indisputable, but extended knowledge of the very different ontogenetic histories of closely allied forms has led us to a much fuller conception of the mode in which stages in embryonic and larval history have been modified in relation to their surroundings, and to a consequent reluctance to attach detailed importance to the embryological argument for evolution.

Ontogeny.

Phylogeny.

The vast bulk of botanical and zoological work on living and extinct forms published during the last quarter of the 19th century increased almost beyond all expectation the evidence for the fact of evolution. The discovery of a single fossil creature in a geological stratum of a wrong period, the detection of a single anatomical or physiological fact irreconcilable with origin by descent with modification, would have been destructive of the theory and would have made the reputation of the observer. But in the prodigious number of supporting discoveries that have been made no single negative factor has appeared, and the evolution from their predecessors of the forms of life existing now or at any other period must be taken as proved. It is necessary to notice, however, that although the general course of the stream of life is certain, there is not the same certainty as to the actual individual pedigrees of the existing forms. In the attempts to place existing creatures in approximately phylogenetic order, a striking change, due to a more logical consideration of the process of evolution, has become established, and is already resolving many of the earlier difficulties and banishing from the more recent tables the numerous hypothetical intermediate forms so familiar in the older phylogenetic trees. The older method was to attempt the comparison between the highest member of a lower group and the lowest member of a higher group—to suppose, for example, that the gorilla and the chimpanzee, the highest members of the apes, were the existing representatives of the ancestors of man, and to compare these forms with the lowest members of the human race. Such a comparison is necessarily illogical, as the existing apes are separated from the common ancestor by at least as large a number of generations as separate it from any of the forms of existing man. In the natural process of growth, the gap must necessarily be wider between the summits of the twigs than lower down, and, instead of imagining "missing links," it is necessary to trace each separate branch as low down as possible, and to institute the comparisons between the lowest points that can be reached. The method is simply the logical result of the fact that every existing form of life stands at the summit of a long branch of the whole tree of life. A due consideration of it leads to the curious paradox, that if any two animals be compared, the zoologically lower will be separated from the common ancestor by a larger number of generations, since, on the average, sexual maturity is reached more quickly by the lower form. Naturally very many other factors have to be considered, but this alone is a sufficient reason to restrain attempts to place existing forms in linear phylogenetic series. . . . .

[*See the masterly exposition of the theory of* MIMICRY *in Vol.* 16 *by* GRANT ALLEN.]

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A TIME-TABLE FOR ECLIPSES.

From the Article (7 pages) by Professor SIMON NEWCOMB, Ph.D., D.Sc., LL.D., &c.

Eclipse.— . . . . . . There are two well-marked periods in which eclipses recur at nearly the same distance from a node of the moon's orbit, one of 223 lunations, the other of 358. At the end of the latter period the eclipse recurs at the opposite node, and at the end of two periods, at the same node. The length of this period is 10,571·95 days, or 29 Julian years less 20·30 days. Hence 18 periods make 521 years, so that at the end of this time the eclipse recurs on the same day of the year. In the mean, the time of recurrence is so nearly at the same distance from the node that we find each central eclipse visible at our time to be one of an unbroken series extending from the earliest historic times to the present, at intervals equal to the length of the period. For example, starting from the eclipse of Nineveh, 763 B.C., June 15, recorded on the Assyrian tablets, we find eclipses on May 27, 734 B.C., May 7, 705 B.C., and so on in an unbroken series to 1843, 1872, and 1901, the last being the 93rd of the series. Those at the ends of 18 periods occurred on June 15, O.S., of each of the years 763, 242 B.C., A.D. 280, 801, 1322, and 1843. As the lunar perigee moves through 242°·4 in a period, the eclipses will vary from total to annular, but at the end of 3 periods the perigee is only 7°·1 in advance of its original position relative to the node. Hence in a series including every third eclipse the eclipses will be of the same character through a thousand years or more. Thus the eclipses of 1467, 1554, 1640, 1727, 1814, 1901, 1988, &c., are total.

Recurrence of eclipses.

The length of the other period, called the Saros, is 6585⅓ days, or 18 years and 11 or 12 days. The fact that eclipses recur at the end of this period has been known from ancient times. Owing to the fractional excess of ⅓ of a day in the period, each recurring eclipse takes place about 120° farther west in longitude than the preceding one of the series, and is therefore not generally visible in the same region. During the course of a Saros there are 223 lunations and 19 returns of the sun to each of the moon's nodes. The clearest idea of the law of recurrence thus arising may be gained by the conception of conjunction-points of the moon and sun in the following way :—

. . . .

[The subject of Eclipses is discussed at great length in the Article ASTRONOMY (78 pages), by R. A. PROCTOR.]

THE TRIAL OF THE PYX.

From the Article (10 pages) by WILLIAM CHANDLER ROBERTS-AUSTEN, F.R.S., and R. A. HILL.

Mint.— . . . . . . The annual testing of the standard of gold and silver coins, called the trial of the pyx, from the "pyx" or chest in which the coins to be examined are kept, is a ceremony of very ancient institution. It arose from the circumstance that the mint master was originally a contractor, under the crown, for the manufacture of the coinage, and it was therefore necessary that periodical examinations of the coins should be held in order to ascertain that the terms of his contract had been complied with. At the present day, when the mint master is no longer a contractor, but an officer of the crown, the trial of the pyx has a somewhat different object; but it would appear from the description of these periodical examinations in some of the earliest mint records that but little change has taken place in the manner of conducting them. The finished coins are delivered to the mint master in weights called "journey weights," supposed to be the weight of coin which could be manufactured in a day when the operations of coining were performed by the hand. The journey weight of gold is 15 lb troy, coined into 701 sovereigns or 1402 half-sovereigns. The journey weight of silver is 60 lb troy. From each journey weight a coin is taken and deposited in the "pyx" or chest for the annual trial. This is made by the freemen of the goldsmiths' company under the direction of the crown in the presence of the queen's remembrancer, who administers the oath to the jury and presides over the proceedings. The coins selected for trial are compared with pieces cut from trial plates of standard fineness, which are in the keeping of the warden of the standards, these pieces being assayed against the coins under examination. . . . .

[For the scientific account of the process of metal testing, see the four-page Article ASSAYING, by Sir WILLIAM CROOKES, F.R.S.]

THE MOST TERRIBLE OF NATURAL PHENOMENA.

From the Article (9 pages) by J. MILNE, F.R.S., F.G.S.

Earthquakes.— . . . . . . We now know that earthquakes are many times more frequent than was previously supposed. In Japan, for example, between 1885 and 1892 no fewer than 8331 were recorded—that is to say, on the average there were during that time more than 1000 disturbances per year. Although many of these did not cause a sensible shaking over areas exceeding a few hundred square miles, many of them were sufficiently intense to propagate vibrations round and through the globe. If we pick out the well-marked earthquake districts of the world, and give to each of them a seismicity or earthquake frequency per unit area one-third of that in Japan, the conclusion arrived at is that considerable areas of our planet are on the average shaken every half-hour.

Frequency of earthquakes.

The knowledge which we now possess respecting the localities where earthquakes are frequent and the forms of the foci from which they have spread, enables us to speak definitely respecting the originating causes of many of these phenomena. It is found, for example, that although in many countries there may be displays of volcanic and seismic activity taking place almost side by side, it is only rarely that there is direct relationship between the two. Now and then, however, before a volcano breaks into eruption there may be a few ineffectual efforts to form a vent, each of which is accompanied by no more than a slight local shaking of the ground. This is true even for the largest and most violent eruptions, when mountains have with practically a single effort blown off their heads and shoulders. Thus the earthquake which accompanied the eruption of Bandaisan, in Central Japan, in 1888, was felt only over a radius of 25 miles. The analyses of the seismic registers of Japan clearly indicate that comparatively few shakings originate near to the volcanoes of the country, the majority of them, like those of many other countries, coming from regions where volcanic rocks are absent. The greatest number spread inland from the Pacific sea-board, the movement becoming more and more feeble as it approaches the backbone of the country, which is drilled with numerous volcanic vents. What is true for Japan is generally true for the western coasts of North and South America.

Volcanoes and earthquakes.

Lord Rayleigh writes on OPTICS in Vol. 17.

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Speaking broadly, earthquakes are most frequent along the steeper flexures in the earth's surface, and in those regions where there is geological evidence to show that slow secular movements in the earth's crust are possibly yet in progress. With a unit distance of 2 degrees, or 120 geographical miles, we find that the slopes running eastwards from the highlands of Japan and westwards from the Andean ridges down into the Pacific vary from 1 in 20 to 1 in 30, and it is on the faces or near to the bottom of these slopes that seismic efforts are frequent. The slopes running from Australia, Eastern America, and Western Europe into the neighbouring oceans vary between 1 in 70 and 1 in 250, and in these regions earthquakes are of rare occurrence. The seismic activity met with in the Himalayas and the Alps finds its best explanation in the fact that these mountains are geologically recent, and there are no reasons to doubt that the forces which brought their folds into existence are yet in action. . . . . .

Origin of earthquakes.

[*For an interesting account of the great eruption of Krakatoa, see Article* GEOLOGY (23 *pages*) *by* Sir ARCHIBALD GEIKIE, *F.R.S.*]

THE NEW GAS,

DESCRIBED BY ITS DISCOVERER.

From the Article (4 *pages*) *by* Lord RAYLEIGH.

Argon.— . . . . . . The analysis of air was conducted by determining the amount of oxygen present and assuming the remainder to be nitrogen. Since the time of Cavendish no one seemed even to have asked the question whether the residue was, in truth, all capable of conversion into nitric acid.

The manner in which this condition of complacent ignorance came to be disturbed is instructive. Observations undertaken mainly in the interest of Prout's law, and extending over many years, had been conducted to determine afresh the densities of the principal gases—hydrogen, oxygen, and nitrogen. In the latter case, the first preparations were according to the convenient method devised by Vernon-Harcourt, in which air charged with ammonia is passed over red-hot copper. Under the influence of the heat the atmospheric oxygen unites with the hydrogen of the ammonia, and when the excess of the latter is removed with sulphuric acid, the gas properly desiccated should be pure nitrogen, derived in part from the ammonia, but principally from the air. A few concordant determinations of density having been effected, the question was at first regarded as disposed of, until the thought occurred that it might be desirable to try also the more usual method of preparation in which the oxygen is removed by actual oxidation of copper without the aid of ammonia. Determinations made thus were equally concordant among themselves, but the resulting density was about $\frac{1}{1000}$ part greater than that found by Harcourt's method (Rayleigh, *Nature*, vol. xlvi. p. 512, 1892). Subsequently when *oxygen* was substituted for air in the first method, so that all (instead of about one-seventh part) of the nitrogen was derived from ammonia, the difference rose to one-half per cent. Further experiment only brought out more clearly the diversity of the gases hitherto assumed to be identical. Whatever were the means employed to rid air of accompanying oxygen, a uniform value of the density was arrived at, and this value was one-half per cent. greater than that appertaining to nitrogen extracted from compounds such as nitrous oxide, ammonia, and ammonium nitrate. . . . At this stage it became clear that the complication depended upon some hitherto unknown body, and probability inclined to the existence of a gas in the atmosphere heavier than nitrogen, and remaining unacted upon during the removal of the oxygen—a conclusion afterwards fully established by Rayleigh and Ramsay.

The announcement to the British Association in 1894 by Rayleigh and Ramsay of a new gas in the atmosphere was received with a good deal of scepticism. . . . .

[*To* CHEMISTRY *are devoted* 158 *pages in the Tenth Edition.*]

A GREAT MASTER ON HIS SUBJECT.

From the Article (30 *pages*) *by* Lord KELVIN, *G.C.V.O., F.R.S., LL.D., D.C.L.*

Elasticity.— . . . . . . (5) *Diagram of St Venant's curvilinear squares for which torsion problem is algebraically solvable.*—This diagram (Fig. 11) shows the series of lines represented by the equation $x^2+y^2-a(x^4-6x^2y^2+y^4)=1-a$, with the indicated values for a. It is remarkable

Fig. 11.

that the values $a=0{\cdot}5$ and $a=-\frac{1}{2}(\sqrt{2}-1)$ give similar but not equal curvilinear squares (hollow sides and acute angles), one of them turned through half a right angle relatively to the other. . . . .

[COMBINATORIAL ANALYSIS, ALGEBRA, DIFFERENTIAL EQUATIONS, DIMENSIONS OF UNITS, ELASTIC SYSTEMS, GEOMETRICAL CONTINUITY, FUNCTIONS OF REAL VARIABLES, LAWS OF MOTION, *are but a few of the Articles on Mathematical subjects in the Tenth Edition.*]

Even within the space of time which divides this Edition of the *Encyclopædia Britannica* from the Ninth the scope of Science has extraordinarily increased. The age is one which is dominated by scientific discoveries which multiply year by year in an astonishing sequence, each more wonderful than the last. It is this characteristic of omnipresence in daily life which makes it impossible in the space afforded by a pamphlet to do anything like justice to the subjects of research which are treated in the Tenth Edition by such men as Lord Kelvin, Lord Rayleigh, Sir Archibald Geikie, Professor Dewar, and Sir Robert Ball.

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THE TENTH EDITION

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Some famous Scientists who have written for the

Encyclopædia Britannica:

CROOKES
HUXLEY
RAYLEIGH
KELVIN
AVEBURY
BALL
GEIKIE

A FEW ARTICLES ON SCIENCE IN THE TENTH EDITION

Acclimatization, Acetylene, Achromatic, Acid and Alkali Manufacture, Acoustics, Adams (J. Couch), Adulteration, Aeronautics, Æther, Airy, Alchemy, Algæ, Algebra, Algebraic Forms, Alloys, Alum, Analogy and Analysis, Anatomy, Argon, Arithmetic, Assaying, Astrology, Astronomy, Atmosphere, Atmospheric Electricity, Atom, Attraction, Axiom, Balance,
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tion, Fermentation, Fireclay, Flame, Flight, Fourier's Series, Galileo, Galls, Galvano-
meter, Gaseous Fuel, Geber, Gelatine, Gems (Artificial), Geology, Halo, Harmonic
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Calculus, Interpolation, Iodine, Iron, Ivory, Joints, Kaleidoscope, Lapidary, Lead,
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(Terrestrial), Magneto-Optics, Mathematical Instruments, Mathematics, Nebular Theory,
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(Theory), Radiometer, Rain-band, Rain-gauge, Saturn, Screw, Sea-water, Seismometer, Tartaric
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Romance of History in Chrysanthemum Land.

IT was only in 1886 that a great tidal wave of Western ideas and reforms struck on the shores of "the land of the Rising Sun," and in a space of time incredibly short for such momentous changes changed the England of the East into a power so formidable, so self-reliant, so conscious of its own strength and its own future, that it dares to throw down the gage to the Muscovite himself. Thirty-four years ago **Japan** was governed by the **Shoguns,** who, like the Dukes of Florence and Milan, ruled the land while the **Mikado** of to-day dwelt—a shadowy, unconsidered figure—in the palace at **Kioto.** These Shoguns were a species of vice-regent who succeeded one another in a regular dynasty, contemporaneously with the existence of the Emperor. Only one of them ruled at a time. Japan was then essentially a feudal country. Next in power to the Shogun were the Daimios, the feudal lords. And they in turn had their knights and squires, the **samurai.** Thirty-four years ago the people rose in rebellion to restore the old dynasty to actual power, and the war of the Meiji between the party of the Shogun and the party of the Emperor began. This civil strife, bitter and bloody as civil warfare invariably is, lasted many a long month till it ended in the complete victory of the Mikado, who, restored to actual power, was brought by his subjects in triumph from Kioto to **Tokyo,** then and now the imperial capital. When this great change occurred in the destiny of his house, the Emperor was a mere lad; but he was a quick-witted, resourceful lad, and when his land was invaded in 1886 by Western ideas, he was quick to grasp the value to him and his people of changes which were so radical that it speaks volumes for his courage and perspicacity that he countenanced their adoption.

All this romantic story, with its astonishing development of constitutional rule under the wise guidance of Marquis Ito (see extract from his biography on p. 28 of this pamphlet), is told in the pages of the *Encyclopædia Britannica;* and, true to its traditions, the Editors have entrusted the narration to those who have spent their lives in Japan, and can tell the story almost from the point of view of eye-witnesses.

Remember this is only one of the romances of History which are to be found in the pages of the Tenth Edition of the *Encyclopædia Britannica.* The rise and decay of the empires of the world, the triumphs and tragedies of dynasties, the romantic stories of the early civilisations of the globe, constitute reading more thrilling than the most exciting fiction.

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ENGINEERING

The real and legitimate goal of the sciences is the endowment of human life with new commodities.—BACON.

TO the readers of the First Edition of the Encyclopædia Britannica the feats of the modern Engineer would have seemed nothing short of miracles. To have told them that their grandsons would travel more than a mile a minute, would make ships of iron float, would build tunnels under rivers, pierce their way beneath mountain ranges, or climb their sides in carriages weighing tons, make boats which would swim like fishes under the surface of the ocean, and even conquer the air itself and sail at will in navigable balloons from place to place, would have been to upset all their ideas of the limits of human possibility and to gain for yourself the reputation of insanity. Yet in the short time which divides the First from this, the Tenth, Edition of the Encyclopædia Britannica all this and much more has been achieved.

The Engineer of to-day is a veritable magician, to whom the elements offer as few obstacles as were supposed to present themselves to the witches of mediæval England. Glance through the extracts below. Few as they are, realize what they represent. See how each tells a story of the conquest of the air, the sea, the earth, the wildest winds and the mightiest waves by man's effort. And if these few interest you, as they cannot fail to do, remember these are mere examples from one or two of the dozens of articles which each of the volumes of the Encyclopædia Britannica contains on the subject of the human conquest of the elements. Just as the essential quality of all mechanical work is its technicality, so the tyro in mechanics will have constant reason, as he consults the Encyclopædia Britannica on the various branches of mechanics, to rely for guidance upon the Index which forms a part of the Tenth Edition; while to the skilled Engineer it will, with this addition to its exhaustive survey of his life's work, prove the best as it is the most complete library which he can obtain.

A MODERN MIRACLE.

From the Article (21 pages) by OLIVER HEAVISIDE, F.R.S.; H. R. KEMPE, Principal Technical Officer, Telegraph Department, British Post Office; FRANCIS JACOB, M.I.E.E.; and J. A. FLEMING, D.Sc., F.R.S.

Telegraphy.— . . . . . . Between 1894 and 1896 G. Marconi gave great attention to the improvement of devices for the detection of electric waves. *Marconi.* He made his sensitive tube, or improved coherer, as follows:—A glass tube having an internal diameter of about 4 millimetres has sealed into it two silver plugs PP by means of platinum wires WW (Fig. 16); the opposed faces of these plugs are perfectly smooth, and are placed within a millimetre of each other. The interspace is filled
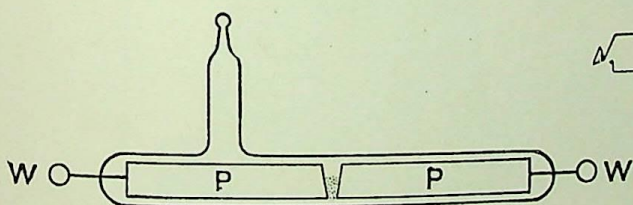
Fig. 16.—Marconi Form of Coherer.

with a very small quantity of nickel and silver filings, about 95 per cent. nickel and 5 per cent. silver, sufficient to fill loosely about half the cavity between the plugs, which fit tightly into the tube. The tube is then exhausted of its air, and attached to a bone or glass rod as a holder. Marconi employed this device as a very sensitive relay to set in operation ordinary telegraphic apparatus. The arrangements of his receiver as subsequently modified are as follows:—The plugs of the sensitive tube T (Fig. 17) are joined to the terminals of the secondary circuit S'S' of a small transformer, called a "jigger," which has its secondary circuit cut in the centre and a small condenser C' inserted. The terminals of the condenser are also connected to a relay R and single voltaic cell B through two coils of high inductance KK; the relay actuates a Morse printer or other telegraphic receiver through a local battery in the ordinary manner. One terminal of the primary circuit P' of the jigger is connected to the earth E, and the other to an elevated conductor A or nearly vertical wire otherwise insulated. The great improvement introduced by Marconi was the employment of this vertical *air-wire*, *aerial*, *antenna*, or *elevated conductor*, as it is variously called, in combination with the earth connexion at both the receiving and transmitting stations; this
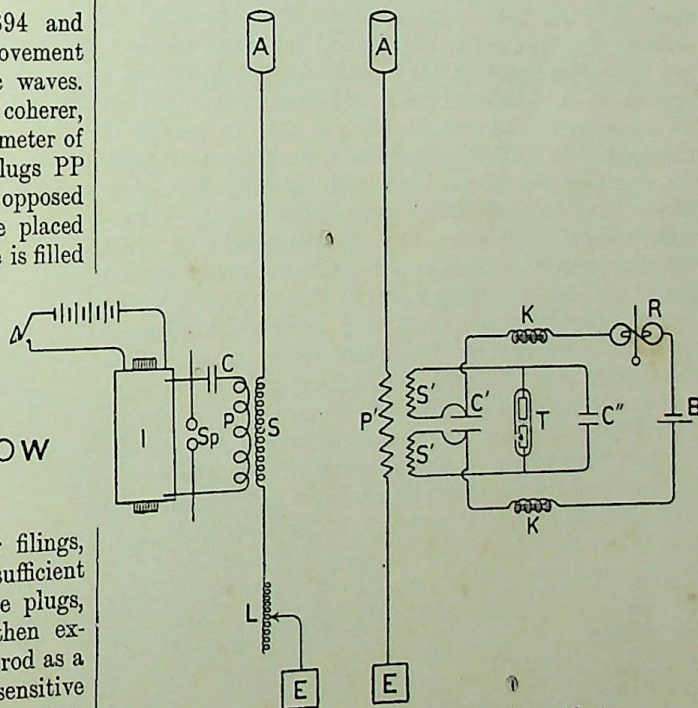
Fig. 17.—Transmitter and Receiver, later Marconi System.

aerial being used as a Hertz oscillator or radiator, and also as an electric wave absorber. A simple coherer, however sensitive, is not affected by an oscillatory spark at any very great distance, the reason being that the coherer is a small object and offers little surface to be acted upon by the electric wave, and therefore gathers up little wave energy. . . . .

[*The Article* ELECTRICITY SUPPLY *describes in its* 33 *pages the development of the industrial uses of Electricity.*]

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THE GREAT NILE DAM.

From the Article (10½ pages) by SIR COLIN CAMPBELL SCOTT-MONCRIEFF, *K.C.M.G., and* F. H. NEWELL.

Irrigation.— . . . . . . The length of the dam is about 6400 feet—nearly 1¼ mile. The greatest head of water in it is 65 feet. It is pierced by 140 under-sluices of 150 square feet each, and by 40 upper-sluices, each of 75 square feet. These, when fully open, are capable of discharging the ordinary maximum Nile flood of 350,000 cubic feet per second, with a velocity of 15·6 feet per second and a head of 6·6 feet. The top width of the dam is 23 feet, the bottom width, at the deepest part, about 82 feet. On the left flank of the dam there will be a canal, provided with four locks each 262 by 31 feet in area, so that navigation will be possible at all seasons. It was intended at first to raise the dam 26 feet higher, but this would have involved the yearly submergence of the celebrated classical temples of Philæ, situated on an island just up-stream of the dam. Had the natives of Egypt been asked to choose between the preservation of Ptolemy's famed temple and the benefit to be derived from an additional 20 feet depth of water storage, there can be no question that they would have preferred the latter; but they were not consulted, and the classical sentiment and artistic beauty of the place, skilfully pleaded by archæologists and artists, carried the day. As at present designed, the storage capacity of the reservoir is estimated at about 3,750,000 millions of cubic feet, which will create a lake extending up the Nile Valley for about 200 miles. It is calculated that yearly the reservoir should be full before the end of March; after that the water-surface in it will remain constant, the volume reaching the reservoir from the south being passed on through the sluices. In May, when the demand for water increases, first the upper and then the under-sluices will be gradually opened, so as to increase the river supply, until July, when all the gates will be open, to allow of the free passage of the flood. In 1902 this magnificent work was completed. The engineer who designed it was Mr W. Willcocks, C.M.G. The contractors were Messrs John Aird & Co., the contract price being £2,000,000. The financial treaties in which the Egyptian Government are bound up would prevent their ever paying so large a sum as this within five years; but a company was formed in London which advances periodically the sum due to the contractors, on receipt from the Government of Egypt of promissory notes to pay sixty half-yearly instalments of £78,613, commencing on the 1st July 1903. There are no treaties to prevent the Government of Egypt from paying so moderate a sum as this year by year, and the payments do not begin until the first year that a return may be expected from the additional irrigation to be effected. . . . .

[AQUEDUCT, BRIDGES, CANAL, COFFER DAMS, PONTOON and RIVER-ENGINEERING are but some of the Articles on kindred subjects in the Tenth Edition.]

THE BISHOP ROCK LIGHT.

From the Article (16 pages) by W. T. DOUGLASS, *M.Inst.C.E.*

Lighthouse.— . . . . . . The lighthouse on the Bishop Rock, which is the westernmost landfall rock of the Scilly Islands, occupies perhaps a more exposed situation than any other in the world. . . . . . In 1851 the erection of a granite tower was begun; the light was first exhibited in 1858. The tower had an elevation to the focal plane of 110 ft., the lower 14 courses being arranged in steps, or offsets, to break up the force of the waves. This structure also proved insufficient to withstand the very heavy seas to which it was exposed. Soon after its completion the 5-cwt. fog bell, fixed to the lantern gallery 100 ft. above
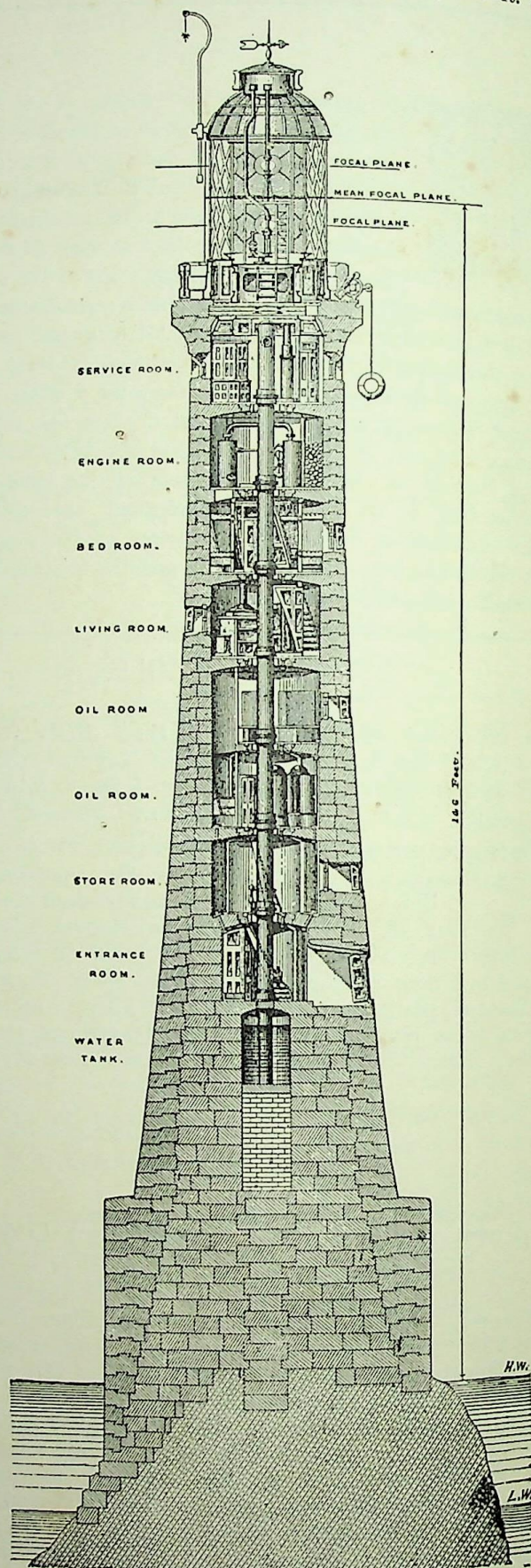
FIG. 2.—Bishop Rock Lighthouse.

high-water mark, was washed away, together with the flagstaff and ladder. . . . .

[HARBOUR, LIFE-BOATS, STRENGTH OF MATERIALS, TITAN CRANES, &c., are some Articles which give details of the almost insurmountable difficulties with which engineers do battle.]

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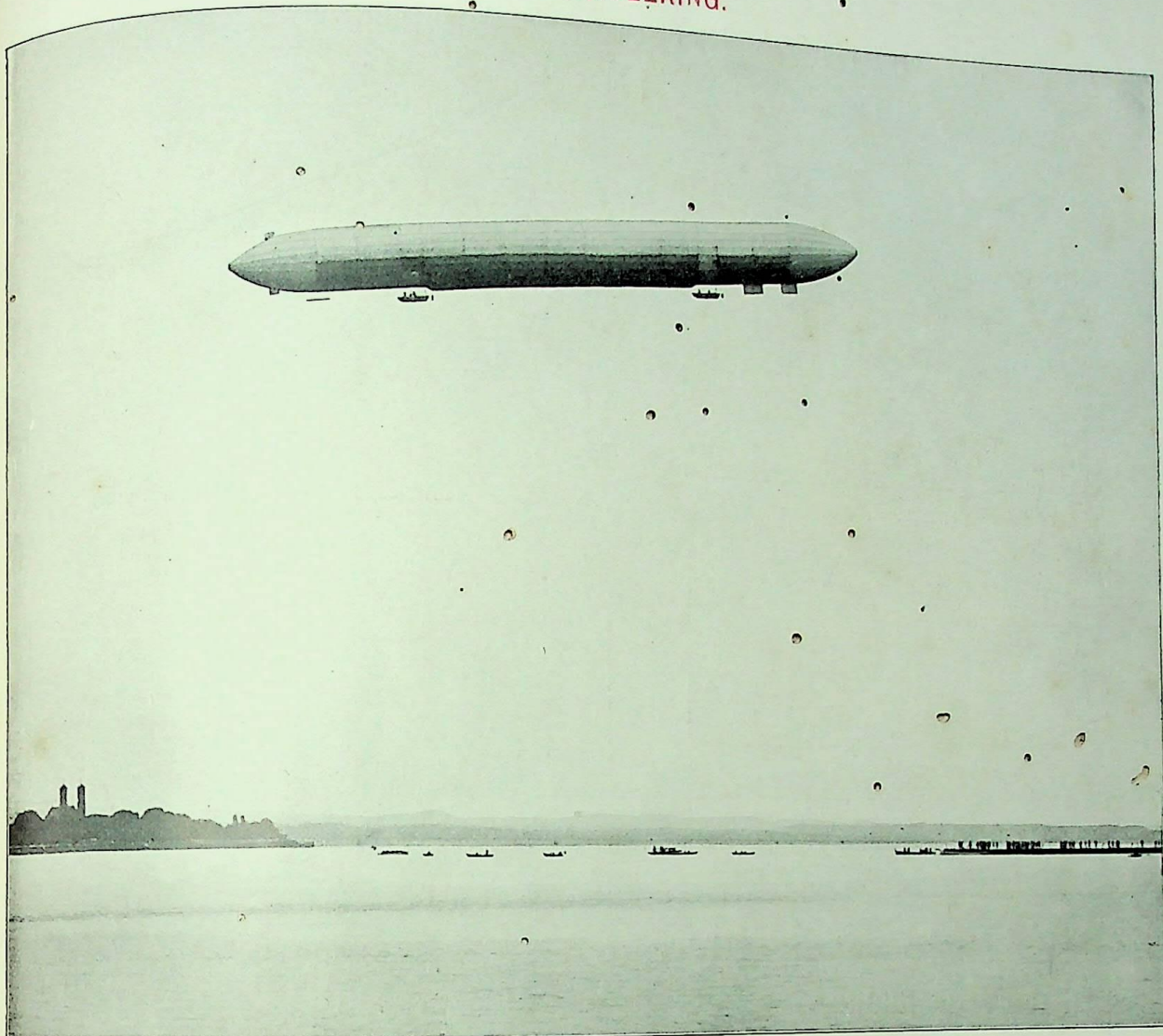
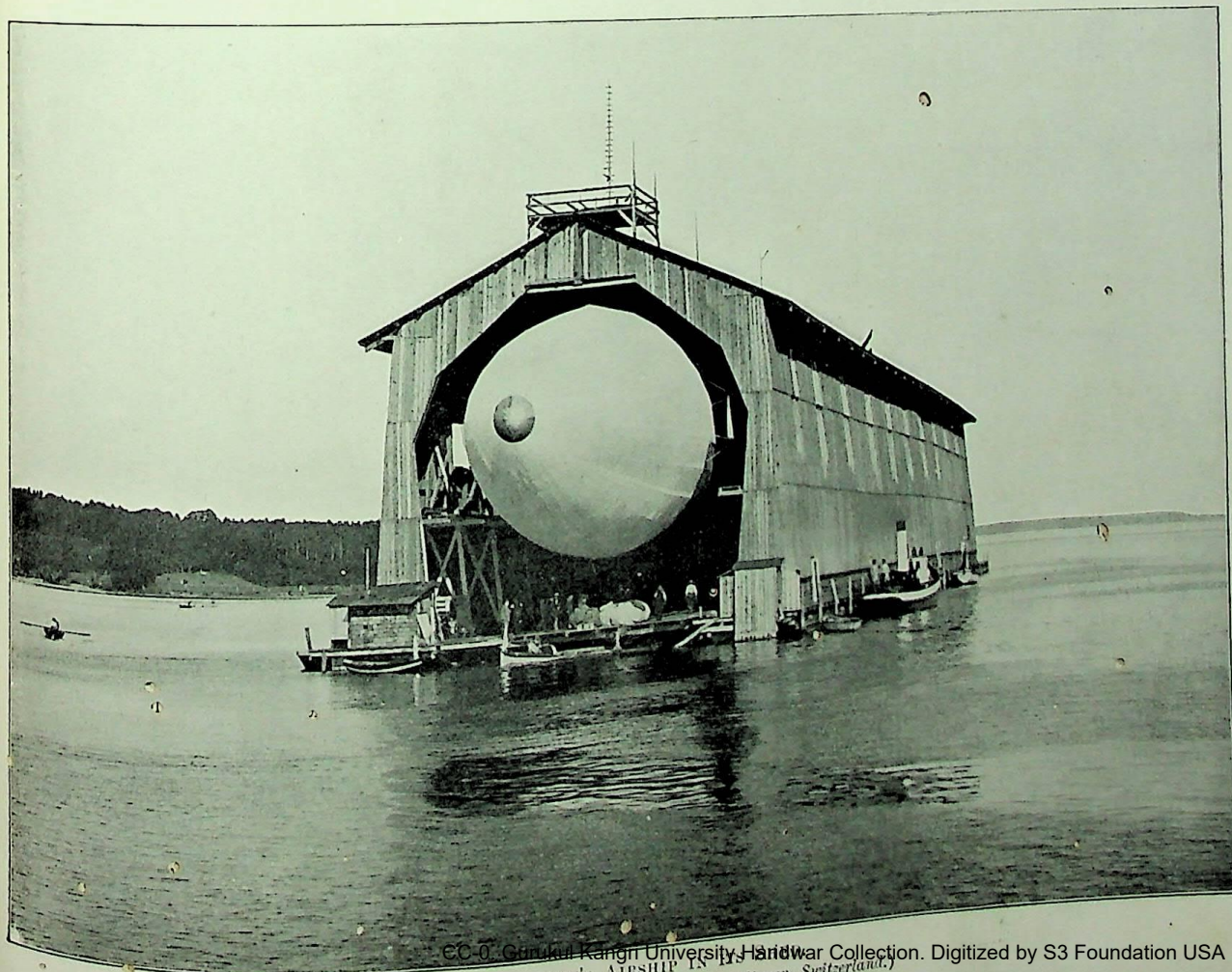

ZEPPELIN'S AIRSHIP IN FLIGHT.

ZEPPELIN'S AIRSHIP IN ITS SHED.
(*From Photographs by F. Schwarzenbuch, Kreuzlingen, Switzerland.*)

The Tenth Edition contains illustrations also of Santos-Dumont's machines, besides pictures of other attempts to solve the great problem of aeronautics.

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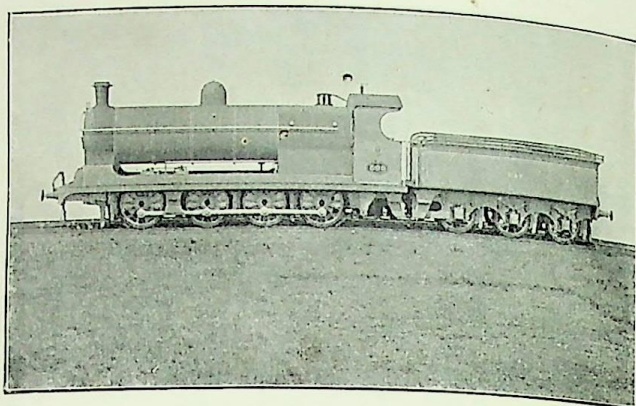
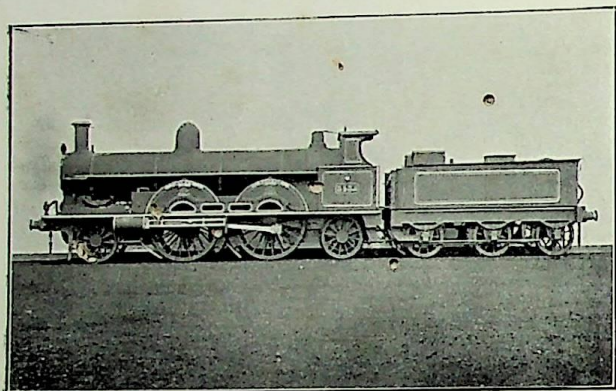
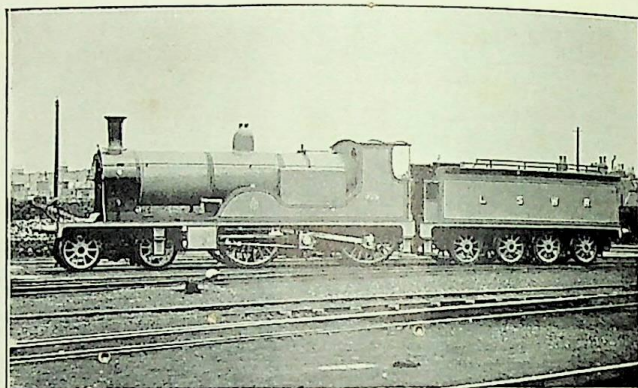
SOME ONLY OF THE ILLUSTRATIONS IN THE ARTICLE RAILWAYS.

(See Extract below.)

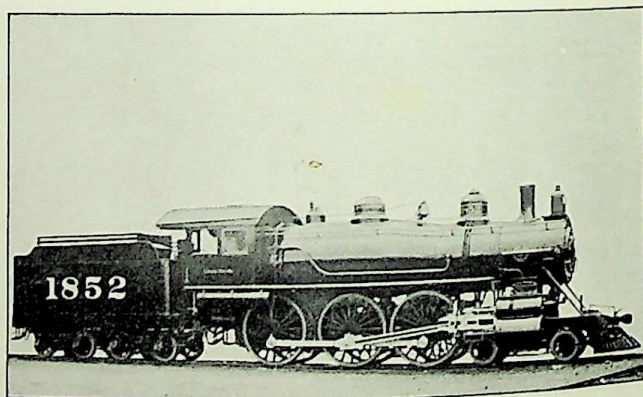
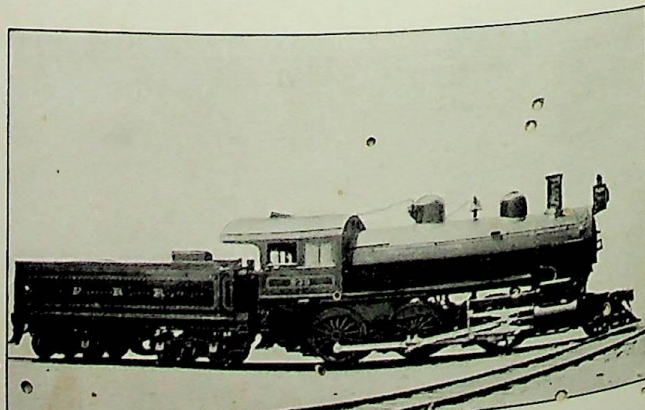
Great Northern Railway. "Atlantic" type. (Doncaster Works.)

Lancashire and Yorkshire Railway. (Horwich Works.)

London and North-Western Railway. Greater Britain Class. Three-cylinder compounds. (Crewe Works.)

London and South-Western Railway. Four-cylinder non-compound.

THE COST OF ENGINES.

From the Article (39 pages) by Major-General C. E. WEBBER, C.B.; A. T. HADLEY, Pres. of Yale University; Lt.-Col. H. A. YORKE, R.E., Chief Inspecting Officer of Railways, and Others.

Railways.— . . . . . . On the Continent of Europe it is customary to sell locomotives by weight, while in Great Britain and the United States they are sold at so much each. The cost of material causes fluctuations, apart from those which result from demand. We may, however, take as typical a British six-coupled goods engine and tender, with cylinders 18 by 24 inches. Such engines were sold in Great Britain in 1899 for about £3000. In the United States we may take as typical an eight-wheel or American-type locomotive and tender, with cylinders 17 by 24 inches. Such engines were sold in 1870 for about $12,750, in 1880 for $9000, in 1890 for $7000, and in 1900 for $8500. In the earlier years such an engine was unusually large and few were built. Now it is smaller than is ordinarily used in the United States. Further, even with the same size of cylinders these engines have increased in size and weight during the thirty years. In 1876 an eight-wheel American engine with cylinders 17 by 24 inches weighed about 72,000 lb; now it would weigh about 90,000 lb. Then the boiler was about 48 inches in diameter, now it is about 54. Steam-pressure has risen from 130 lb to 180 lb and more. In the United States the prices in the last quarter of 1900 were about $11,500 for a 60-ton Consolidation locomotive, $15,500 for a 90-ton Consolidation, and from $12,500 to $15,000 for a 75-ton Mogul or 10-wheel engine. . . . . . .

Cost of locomotives.

[AQUEDUCTS, BRIDGES, PONTOONS, MILITARY ENGINEERS, PETROLEUM, ELECTRIC TRACTION, *are some only of the Articles in the Tenth Edition which will interest Engineers.*]

Compound 10-wheel type. Union Pacific Railway. (Baldwin Loco. Works.)

"Mogul" type. Pennsylvania Railway. (Baldwin Loco. Works.)

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THE THIRD-RAIL SYSTEM.

From the Article (33 pages) by Professor J. A. FLEMING, LOUIS DUNCAN, *Ph.D., and* EMILE GARCKE, *F.S.S.*

Electricity Supply.— . . . . . . A rail similar to the track-rails is laid upon insulators and forms the working-conductor. On the elevated railways in New York, Brooklyn, Boston, and Chicago a pressure of about 600 volts is used between this rail and the running-rails which form the return circuit. Contact is made with the third rail by means of a bronze or cast-iron shoe, either resting upon the rail by its own weight, or pressed down upon it by springs. This is generally attached to some part of the truck of the car in preference to any part of the body of the car, so as to avoid any vibration or swaying due to the movement of the body upon its springs. The third-rail system has been adopted in many instances where large and powerful trains are to be operated on private rights of way, but it is nowhere in use for electric traction upon highways or in streets where there is any passing of foot passengers or vehicles. An excellent example of such construction may be found in the Albany and Hudson Railroad, which connects the City of Albany with the town of Hudson, in New York State. Here the length of the road is about 32 miles, the track being of standard gauge and laid with a 60-pound T-rail. A T-rail of the same size, raised about 1 foot above the level of the running-rails, is used for the electrical conductor, and is installed on insulators situated 5 feet apart on the ends of the cross-ties. All these rails are well bonded with copper bonds at the joints, and at road crossings, which on this railroad are at grade, the third rail is omitted for a distance nearly equal to the length of a train. Appropriate cast-iron shoes, fixed to the trucks of the front and rear cars of a train, bridge the space, so that the forward shoes are running on the rail past the break before the rear shoes leave it. Upon this railroad motors of considerable size and power are used, and both passengers and freight in their original cars, as received from connecting steam railways, are transported. Other examples of third-rail construction occur in the underground systems of the City and South London Railway, the Waterloo and City Railway, and the Central London Railway in London, and the Versailles Division of the Western Railway of France. Experiments of great interest and value have been made by the New York, New Haven, and Hartford Railroad, upon a section of its track in the State of Connecticut, with a very simple system of third-rail construction, in which the conductor-rail is placed between the running-rails. . . . . . .

[*See the Article* ACCUMULATORS *for further information on the subject of Electric Traction.*]

HORSELESS VEHICLES IN ENGLAND.

From the Article (11 pages) by the Hon. C. S. ROLLS *and* H. S. HELE-SHAW, *F.R.S.*

Motor Vehicles.— . . . . . . The three commonest methods of propulsion that have been employed up to the present are steam, oil, and electricity. Of these steam is undoubtedly the most suitable for heavy loads, having a great range and elasticity of power; oil or spirit for light carriages enabling long distances at high speed to be conveniently covered without stoppages: whilst electricity—the "ideal" motive power—is at present a luxury to be employed only for towns and short distances, until a light

battery is discovered having a far greater capacity. The mechanical difficulties that have been encountered in the development of the light motor vehicle are very many, and the chief disadvantages hitherto prominent have been noise, vibration, and uncertainty of action, all of which, as one may notice in the modern vehicles, have been greatly reduced, although it is still essential for an owner to have a mechanical instinct—or employ a competent man—for the efficient working of his car. For their advantages, apart from heavy transport, much may be said. The capabilities of the modern Automobile, the extraordinary control, freedom from vibration when in motion, and the exhilarating effect of gliding swiftly and smoothly through the air, are points of which the ordinary individual is totally ignorant; hence the reason why a first ride in a good vehicle usually converts the most prejudiced person. A good motor car has a large field of use and enjoyment, though the public should be cautioned against the purchase of cheap and inferior productions, many of which are on the market and which cause much disappointment. A motor carriage has a scope of work far beyond the capabilities of a horsed vehicle. It can cover long distances, is under absolute control, and can therefore travel at very high speeds with perfect safety. It greatly economises space when among street traffic; and would, if generally employed, render the streets far more sanitary, as well as reduce the wear on the roads. . . . .

[*The Tenth Edition contains Articles* GASEOUS FUEL, GAS ENGINES, PETROLEUM, ACCUMULATORS, ELECTRICITY, *&c.*]

THE TOOLS OF THE FUTURE.

From the Article by F. A. HALSEY, *Consulting Engineer of the Rand Drill Company.*

Pneumatic Tools.—The term pneumatic is applied to a class of machine-shop appliances of recent origin which have been developed chiefly in America, and, in the initial stages, in the railway repair and maintenance shops of that country. This development was due to the prior existence in those shops of means for compressing air. The air-brake is almost universally used on American railways, and in consequence numbers of the air-pumps which are fitted on the locomotives are always to be found in such shops, either awaiting or having undergone repairs. In these circumstances, when an apparently useful application of compressed air was devised, it became a simple matter to lay the necessary pipes and connect up one of the pumps for trial. In many cases these pumps, in spite of their well-known low efficiency, were retained for a considerable time, several being combined in a battery; but when the economy of the new methods had been fully demonstrated, well-designed air compressors of a suitable and economical type were substituted, and are now considered a necessary part of the equipment of a well-organized American railway repair shop. From such shops the use of the tools has extended to others, and especially to shipyards.

The machines may be roughly classified into small portable tools, guided largely by the hand, in which the effort exerted is small but fairly continuous; and larger stationary tools, in which a considerable effort is exerted, but intermittently only. All are alike in one particular—the aggregate of power consumed per hour is small. . . . .

[*The Tenth Edition also contains Articles on* PNEUMATIC DESPATCH, PNEUMATIC POWER, ELECTRIC POWER, ELECTRIC WELDING, HYDRAULIC POWER, HYDROMECHANICS, *&c.*]

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